EQUIOS DTP Output Guideline

The 16th Edition for EQUIOS Ver5.00 / Ver6.00 or later

SCREEN Graphic Solutions Co., Ltd.

This output guide supports following Products.
EQUIOS Ver5.00 EQ034 or later
EQUIOS Ver6.00 EQ009 or later

Introduction

This is the 16th edition of the EQUIOS DTP Output Guideline, in which information including new DTP application support has been added to the previous 15th edition of the EQUIOS DTP Output Guideline.
This document explains the summary of changes from the 15th edition.

Newly added items

The following describes the major items that have been added to the 16th edition.

Addition of application support

Support for through from Adobe Creative Suite6 to Adobe Creatice Cloud2018 have now been included in the this document.

Omitted issues

Concurrent use of this guideline with the previous 14th edition Guideline

Descriptions for the following items are omitted since the 15th edition. This is to enhance the provision of information about the transition to a PDF workflow in the future, and does not mean the corresponding operations are not supported.
For information on these items, see the 14th edition of the Trueflow DTP Output Guideline, which will be provided continuously. The information in the previous edition can also be used for EQUIOS.

PostScript workflow

Description of the PostScript workflow is omitted. PostScript output is of course available with EQUIOS as well, however, there is no new information on it. When a PostScript workflow is required[*1)], see the 14th edition of the Trueflow DTP Output Guideline.

[*1)] As there are more advantages with a PDF workflow in Adobe Creative Suite 2 or later and QuarkXPress 8 or later, it is not necessary to actively use a PS workflow.

Application support

Descriptions of Adobe Creative Suite (1), Adobe Creative Suite 2, and all versions of QuarkXPress are omitted[*2)].
These applications are supported in EQUIOS as well, however, special care must be taken in using these applications because there are many restrictions on operations.

[*2)] QuarkXPress 10 and later versions are not supported.

Guidelines for transitioning to a PDF workflow

*1)This document provides recommended standards for balancing the factors involved in the output of DTP data such as the quantity of output transparency effects, the amount of support information, and the future potential of that workflow.
This does not mean that no other workflow can be used.

Recommended workflow environments

EQUIOS supports many input file formats, multiple RIP'ing systems, and many DTP applications, but this document describes the DTP workflow environment that we recommend[*1)] most at this time.

PDF/X workflow

We recommend using PDF/X, which is ISO-compliant, rather than PostScript, which was used in the past. **-> "Recommendation of using PDF/X" (P3)**

PDF/X is a subset of the PDF standard for printing that was developed to run printing more efficiently. It has been formalized as an ISO 15930 standard, so it is possible to output safely. For example, PDF code that is not related to printing and fonts that are not embedded are prohibited. Even if you enter normal PDF data, if it includes information that is not appropriate for printing, it may not be possible to print, and it may take time and effort to modify it from the native data. With PDF/X, the data must comply with a formalized standard before the PDF can be created and input, so it is possible to eliminate this type of time and effort and create a practical workflow.

Adobe PDF Print Engine

We recommend the Advanced PDF processing, which uses the Adobe PDF Print Engine, rather than the Conventional PS/PDF processing. **->"Adobe PDF Print Engine" (P4)**

The Adobe PDF Print Engine is new Adobe RIP technology, and rather than processing PostScript in a traditional CPSI RIP, the Adobe PDF Print Engine can process the PDF directly.
In direct processing of PDF using the Adobe PDF Print Engine, it is not necessary to use device-dependent processing in advance, such as flattening of transparency effects or conversion of RGB images to CMYK. It is possible to process the PDF in the RIP as is. Our unique technology further improves transparency effects in the Adobe PDF Print Engine.
The Adobe PDF Print Engine is used for all computations in EQUIOS.

Optimal DTP applications

We recommend using Adobe Creative Suite 6 and Adobe Creative Cloud as your DTP applications in order to get the most from EQUIOS's features.[*2)]

-> "DTP applications and creating data" (P4)

We recommend the use of Adobe Creative Suite 6 and Adobe Creative Cloud which do not cause major problems and support direct output of PDF/X-4.
This document refers to the following versions unless otherwise specified.

- InDesign and Illustrator are any version from CS6 to CC2018.

*2)This means how to make the best possible use of EQUIOS's features, not that other applications are not supported.

Recommendation of using PDF/X

PDF/X-1a and PDF/X-4

The points to note and required technical information for PDF/X-1a and PDF/X-4 are different, and in this document the issues for which it is necessary to differentiate them are given below. If you do not have either display, please read this as general information.

X-1a Information necessary for a PDF/X-1a workflow

X-4 Information necessary for a PDF/X-4 workflow

PDF/X is ISO 15930 compliant and has several variations. These include PDF/X-1a, which prohibits the use of RGB images and transparency effects, PDF/X-3, which allows the use of RGB images, PDF/X-4, which allows transparency effects and layer as well as RGB images, and PDF/X-5, which in addition to the features of PDF/X-4 allows external references for graphics. In addition, from 2010, PDF called "PDF/VT" for variable data printing, which was published in ISO 16612-2, was standardized based on PDF/X-4 and PDF/X-5 technology, and a PDF/X workflow is recommended from the standpoint of future potential.
Use of PDF/X-4 is recommended for data created with Adobe Creative Suite 3 or later while PDF/X-1a should be used for other data.

PDF/X-4 workflow

X-4

PDF/X-4 is an indispensable standard for device-independent PDF workflows. Unlike PDF/X-1a, where it is necessary to flatten transparency objects and convert to CMYK in advance, it is possible to make the fullest use of that advantage.

There are two advantages to using PDF/X-4, which are explained below.

1. In an RGB workflow where the data includes transparency effects, you can use PDF that preserves the transparency effects as is (live transparency).*
   See "Color management and RGB workflow" (P39) for more information.
2. As for improving text quality, if you process PDF/X-4 using the Adobe PDF Print Engine, you have the advantage of being able to reproduce the data without losing the original data images.

PDF/X-4 allows you to include transparency effects and layers in the earlier PDF/X-3. Although the base version of PDF has advanced from PDF1.3, which does not support transparency effects, to PDF1.6,[*1)] which does support them, its restrictions are about the same as those for the earlier PDF/X-3 with the exception of allowing transparency effects and layers.

[*1)] The version of PDF/X-4 should have been PDF1.6 or earlier, but CS3 - CS5 only supports data created in PDF1.4, and it is not possible to create PDF/X-4 that includes layers.

By using PDF/X-4, it is possible to improve RGB workflows where the data includes transparency effects as well as text quality, but unlike with a PDF/X-1a workflow, transparency effects are handled by the RIP, so it is necessary to be more aware of the characteristics of the RIP processing than with a PDF/X-1a workflow.

PDF/X-1a workflow

X-1a

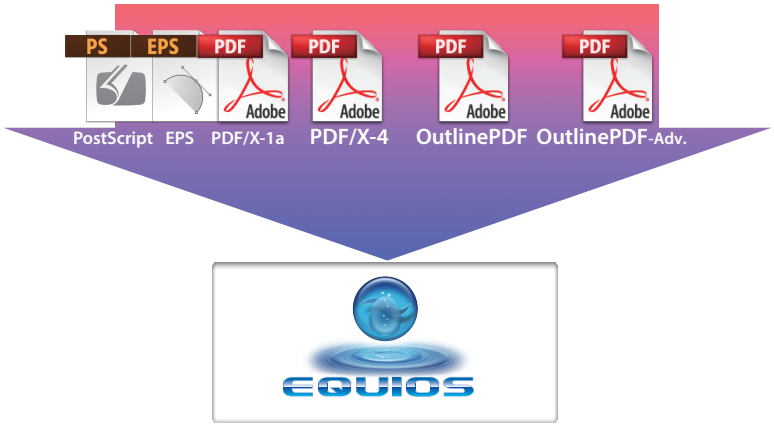
A PDF/X-1a workflow requires RGB images to be converted to CMYK images and requires all of the fonts to be embedded, but the most difficult task is to flatten transparent objects.
For objects for which Transparency was specified in an application, is necessary to separate "objects that appear to be transparent but that are not transparent".
See "Transparency effect" (P6) for information about flattening transparent objects.

ADOBE® PDF PRINT ENGINE

Adobe PDF Print Engine

Adobe PDF Print Engine of EQUIOS

With EQUIOS, once the Adobe PDF Print Engine is incorporated, printing workflows such as a POD (Print-on-Demand) can be supported, and rather than creating a PDF that is optimized for each individual device, a single PDF job can be processed flexibly for all types of devices.
The Adobe PDF Print Engine is used for all computations in EQUIOS.
As described in "Supported DTP applications" (P4) below, use of Adobe PDF Print Engine makes the workflow simpler, provides many advantages in quality.



DTP applications and creating data

Supported DTP applications

*1) See "EQUIOS Notes on Using", which is included with EQUIOS, for information about other applications.

In the EQUIOS DTP Output Guideline, the DTP applications listed in "Supported DTP applications" (P4) are supported,*1) but we recommend Adobe Creative Suite 6 or later as the DTP applications that can take the best advantage of the Adobe PDF Print Engine and PDF/X-4.
It is not simply important to use these DTP applications. It is also important to make the optimal settings in them (see "PDF export presets" (P78)) and create data that conforms to those settings (see "Recommendations for direct output of PDF and native import" (P5)).

- EQUIOS DTP Output Guideline support

	DTP Applications	Workflow
EQUIOS DTP Output Guideline recommended Applications	Adobe Creative Suite 6 | Adobe Creative Cloud 2018	Direct PDF/X-4 Output
	Adobe Creative Suite 3 -5.5	Direct PDF/X-4 Output
	Adobe Creative Suite 2 Adobe Creative Suite	Direct PDF/X-1a Output Restrictions apply(P75)
	QuarkXPress 7 / 8 / 9	Direct PDF/X-1a Output
	QuarkXPress 6.5	PostScript Output and convert to PDF/X-1a by Distiller

Recommendations for direct output of PDF and native import

PDF/X-4 that cannot be created in Distiller

As you can see in the table under "Supported DTP applications" (P4), in all cases we recommended workflows using direct output of PDF, not PostScript for the Adobe Create Suite and Adobe Creative Cloud. Direct output is particularly critical for PDF/X-4, which allows the inclusion of transparency and layer information.

To process PDF data in Distiller, you must first convert it to PostScript, but since PostScript cannot encode transparency effects and layers, the data is flattened.

To preserve transparency and layer information, it is necessary to output PDF/X-4 data directly from the DTP application.

Illustrator native workflows

As described in "PDF/X-4 workflow" (P3) , to create PDF with the transparency effects preserved as is (Live Transparency), it is necessary to import native Illustrator format data when importing Illustrator data into InDesign, not EPS data whose transparency effects are flattened.

EQUIOS uses the Adobe PDF Print Engine, so we recommend that you import native Illustrator data (.ai) into InDesign.

Versioning workflow

A versioning workflow that uses these PDF layers is supported by a workflow that uses Adobe PDF Print Engine for EQUIOS. See the Versioning Operation Manual that is included with EQUIOS for more information.

You cannot create PDF with layers even if you use the "EQUIOS X4 2008_1_EU.joboptions" and "EQUIOS X4 2008_1_US.joboptions" PDF preset file for creating PDF/X-4 that is provided in Adobe CS3 - CS5.

A versioning workflow uses layers rendered using PDF and is a method for output of multiple versions of the same document, which enables both a workflow with layered output function and support for multiple languages. This workflow can also be used with PDF/X-4 data.

Follow the steps below to create the data.

1. Create the data for the application layers (see the manuals for the individual applications).
2. See "Creating PDF/X Files in InDesign" (P58) or "Creating PDF/X Files in Illustrator" (P63) select "EQUIOS X4 2010_1_EU.joboptions" or "EQUIOS X4 2010_1_US.joboptions" in "PDF Export Presets", and create PDF data containing PDF1.6 format layers.

Technical information on PDF workflow

Transparency effect

What is a transparency effect

X-1a X-4

The transparency effect is a new function added in Illustrator 9 and InDesign2.0 or later. If you use this transparency effect, problems may occur during output depending on the settings that have been made. However, it is possible to successfully output files with the appropriate processing in almost all cases if you understand the mechanism and how to make the settings.
If you use transparency effects, you must always flatten the objects when you output using PDF/X-1a. Transparency flattening can be performed in advance in a DTP application that can use “Transparency”, such as Illustrator or InDesign, so it becomes unnecessary to perform the flattening in the RIP.
However, the settings for flattening transparent objects differ depending on the content of the data, so there are times when output using the default settings in the application does not yield the expected results. If this happens, it is necessary to change the settings.

Examples of data that are made transparent

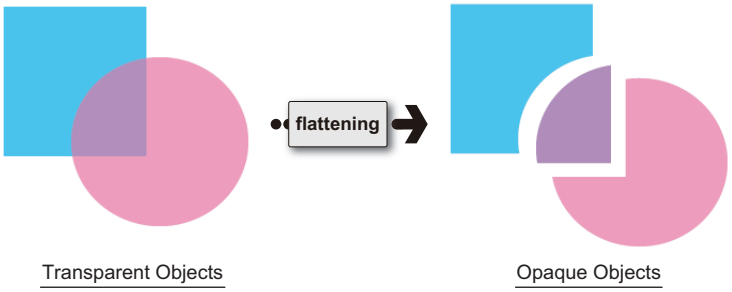
Data that includes “transparency” also includes data with the following styles, symbols and effects to which transparency is applied in advance in addition to operations set in the Transparency palette.
It is important to check whether the transparency effect has actually been applied using the procedure explained on “How to check transparency” (page13) .
Some elements in the Symbols and Graphic Styles palettes
Some options in the Effect menu
(= menus that can only apply effects to vector objects)
- SVG filter
- Stylize options (Feather, Drop Shadow, Outer Glow, Inner Glow)
- Blur
- Pixelate (all submenus)
- Sharpen, etc.

Overview of flattening

X-1a

In PDF1.3, which is the basis of PostScript and PDF/X-1a, there are no commands for rendering transparency. It is necessary to convert all of the transparent objects in an application into data for objects that are 100% opaque while still preserving the appearance of transparency. This process is called flattening. If you use transparency effects this flattening process must be run at some stage in the data processing.

Example of flattening :



At what point is the flattening performed?

X-1a

*1)For Illustrator (.ai) and Illustrator EPS, you must select either Preserve Appearance or Preserve Appearance and Overprints.

If you perform one of the following operations, the file will be flattened.

- If a file including transparent elements is output to a PostScript printer.
- If a file including transparent elements is in Illustrator 8 or earlier format * (Illustrator (.ai), Illustrator EPS, PDF 1.3, etc.) or in a file format that does not recognize transparency (PICT, EMF, WMF).
- If the Flatten Transparency command is used.
- If Preserve Appearance is selected in AICB (no transparency support) in Files & Clipboard, and the transparent objects are pasted into another application.

How is it flattened?

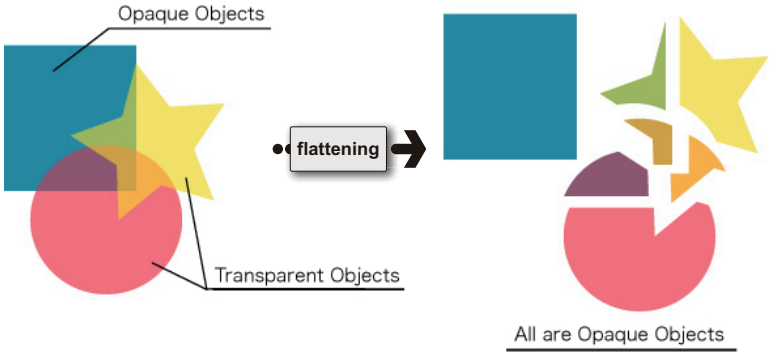
X-1a

*1)Only areas where transparent gradients overlap gradients are rasterized.

	Before flattening	Flattened	After flattening
Opaque objects	Vectors	Not flattened	---
Transparent objects	Vectors	Flattened	Vectors
Transparent gradients	Vectors	Flattened	Rasters*1) / Vectors
Images	Rasters	Flattened	Rasters

I. Opaque objects & transparent objects

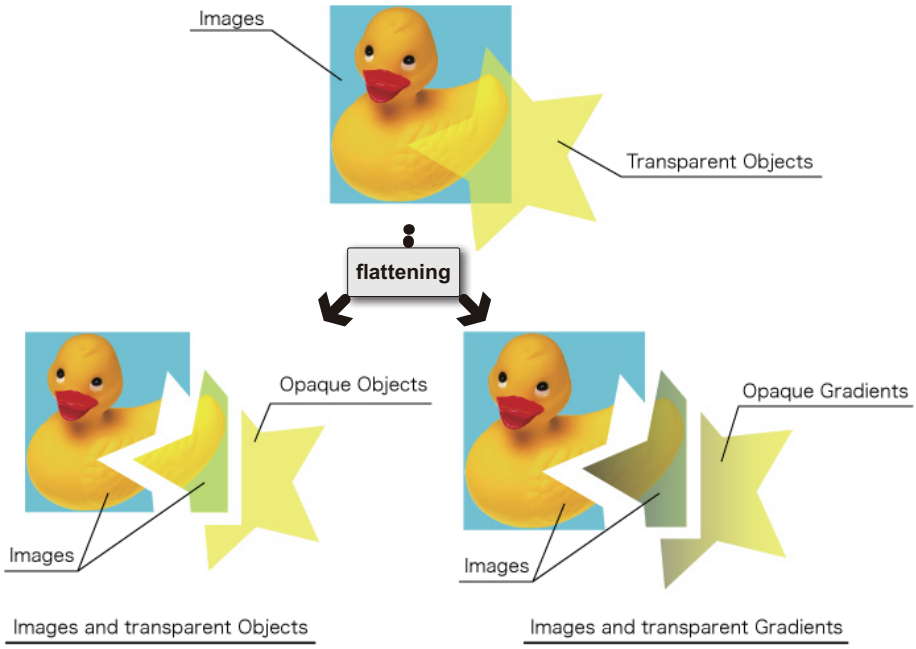
X-1a



II. Images & transparent objects / Images & transparent gradients

X-1a

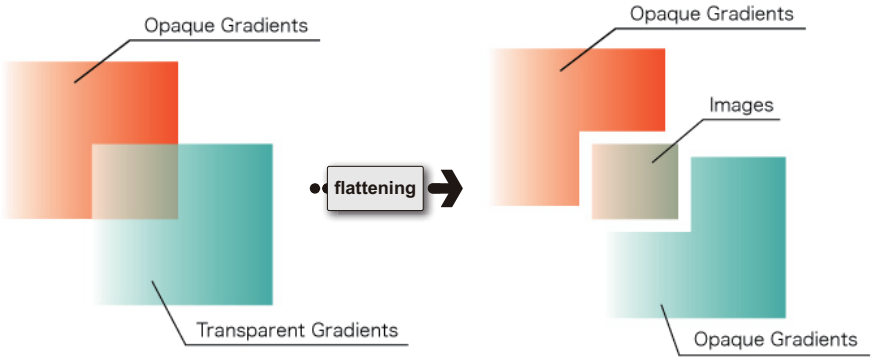
Areas where images and transparent objects overlap are rasterized.



III. Transparent gradients & gradients

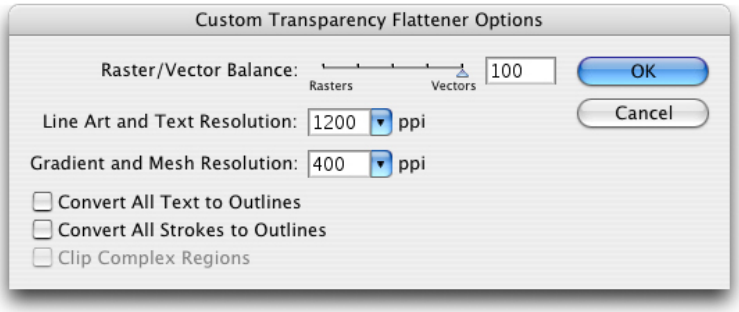
X-1a

If transparent gradients overlap gradients (either transparent or opaque), the overlapping areas are rasterized.



More information about the Transparency Flattener Options

X-1a



I. Raster / Vector Balance

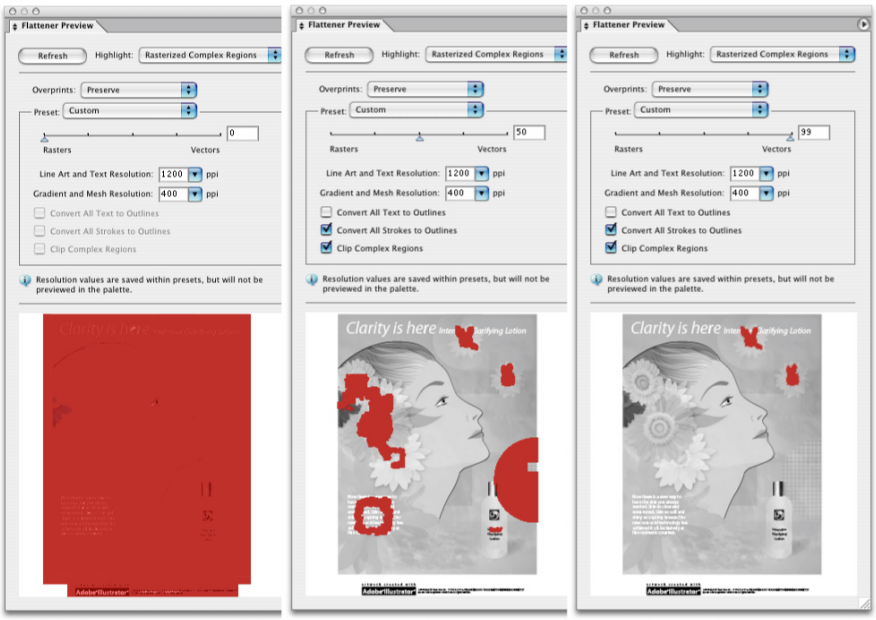
X-1a

If you use transparency effects, Raster/Vector Balance setting is extremely important.
The area of the vector data that is rasterized (image quality), file size and processing times differ as a consequence of the Raster/Vector Balance.
It is not necessarily the case that a higher value is better for this setting.
We recommend using a setting of “100” for normal operations, but on rare occasions, problems occur during output of complex data that includes transparency. You can prevent this from happening by moving the slider to a setting of “99” to “75”. Which setting is most appropriate differs depending on the data, so if the data is complex, we recommend checking the Flattener Preview palette as you change the setting to determine the best value, and then generate a proof.

If the setting is "100"
If the Rasters/Vectors slider is set to 100, areas overlapped by images or gradient areas overlapped by transparent gradients are always rasterized.

- Checking the Flattener Preview palette
  In the following example, the Rasters/Vectors Balance is changed and the effects on the “Rasterized Complex Regions” are displayed and compared.

[0] [50] [99]



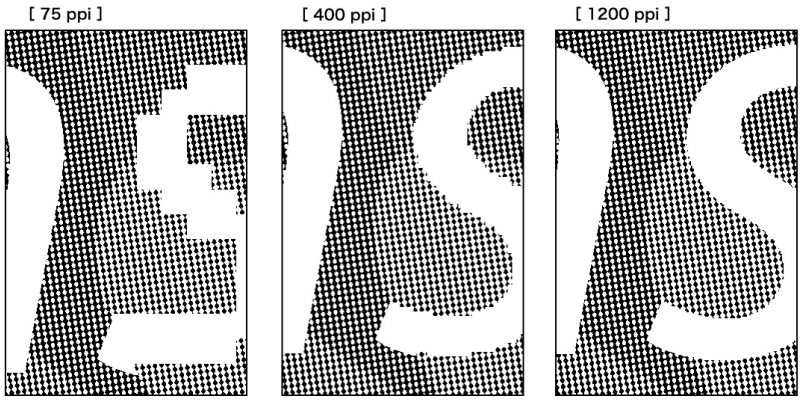
II. Resolution of line art and text

X-1a

This example uses sample data included with Illustrator 10 flattened to "75" in "Rasters / Vectors" that was output via DotTIFF output (Y separation) at 2400dpi from EQUIOS.

[Rasterization Resolut0on]:
If the output device resolution setting in "Rasterization Resolution" above is the same, you can achieve the best quality, but the PostScript data you create increases in size, which lowers performance. Adjust the balance of quality and performance by setting a resolution that can be divided by an integer that yields sufficiently high quality.

Here we set the resolution for the rasterized line art and text areas.



III. Other options

[Gradient Mesh Resolution]
Here we set the resolution for rasterized gradient and mesh areas. You can also set the maximum resolution for drop shadows and blurs.

[Convert All Text to Outlines]
Converts all of the text objects to outlines and discards the text character information. When you select this option, the effect on the text width from the flattening process is suppressed, but small fonts become slightly thicker.

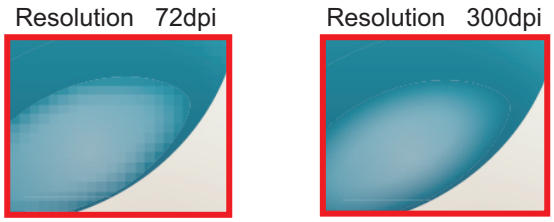
[Convert All Strokes to Outlines]
Converts all of the strokes to outlines. The paths for the areas of transparent objects that overlap areas are converted to outlines.

[Clip Complex Regions]
Processes the edges between vector areas and the rasterized areas so that the object paths overlap. If only some of the vector objects are to be rasterized, this reduces jaggies in the border areas, but the paths become more complex.

[Clip Complex Regions] :
We recommend turning this On when the Raster/Vector Balance is other than 100.

Illustrator rasterization effect settings

In Illustrator, you can set rasterization effects for the document.
Rasterization effects have enormous effects on artwork that you create.
As a result, be sure to check the settings before using filters or effects. If these settings are too low, banding may occur in the output.
Choose “Document Raster Effects Settings...” from the “Effect” menu.



How to check transparency

X-1a X-4

It is still important to check in advance where transparency is being used, even in a PDF/X-4 workflow.

We recommend that you also use the Flattener Preview palette to see in advance where transparency objects are used in the file and whether or not they are flattened. If you cannot predict the output results, print a proof and check whether or not there are problems.

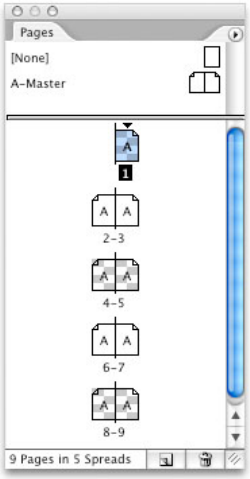
I. Pages palette

*1)In InDesign CS3 or later, if you use transparency effects on a page, a small icon that indicates transparency effects is displayed for that page in the "Pages" palette.
In CS4 or later, if you make setting changes in "Panel Options" in the "Pages" palette, it is now possible to check whether or not transparency effects were applied by the display of a small icon that indicates transparency effects.

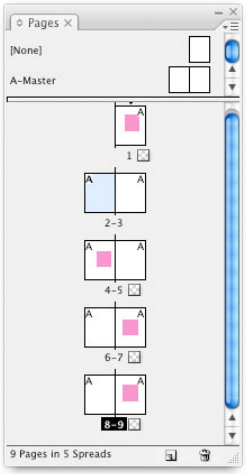
In InDesign CS - CS5, the presence of transparent objects can be checked using the Pages palette.

1. Display the Pages palette
   When any transparent object is included in the page, the pages icon displays a checkerboard pattern.*1)

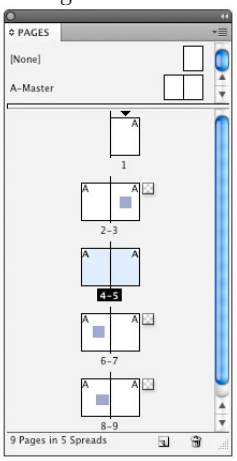
InDesign CS / CS2



InDesign CS3



InDesign CS4 / CS5



2. To check the transparent objects and the normal objects affected by the transparency effect in detail, use the Flattener Preview palette, which is described in the next section.

II. Transparency Flattener Preview

Installing the plug-in into Illustrator 10
It is necessary to install the Flattening Preview palette plug-in to display the Flattening Preview palette.

(Windows):
Drag the "Flattening Preview.aip" file in the Illustrator10 \ Utilities \ Flattening Preview folder into the Plug-ins folder.

(Macintosh):
Drag the "Flattening Preview Plug-in" file in the Adobe Illustrator10 / Utilities / Flattening Preview folder into the plug-in folder.

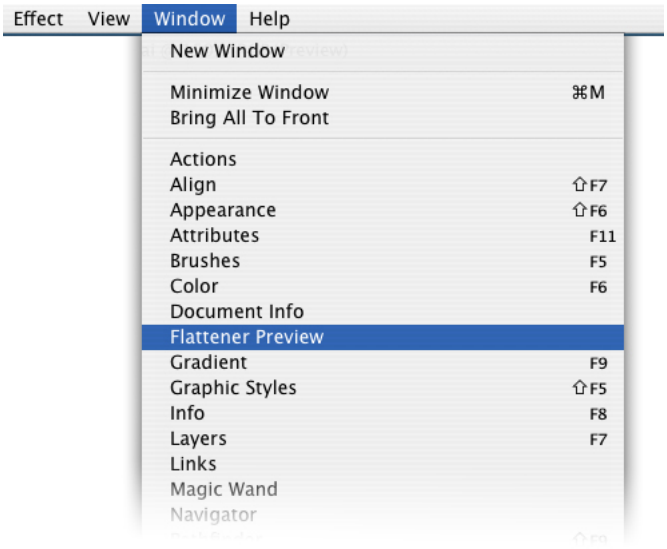
Displaying the preview window (InDesign CS - CS5):
Display the palette using Window > Output > Flattener Preview. The preview appears directly in the layout, so check it there.

(Acrobat 7):
Display the palette using Tools > Print Production > Transparency Flattening. The preview appears in that dialog box, so check it there.

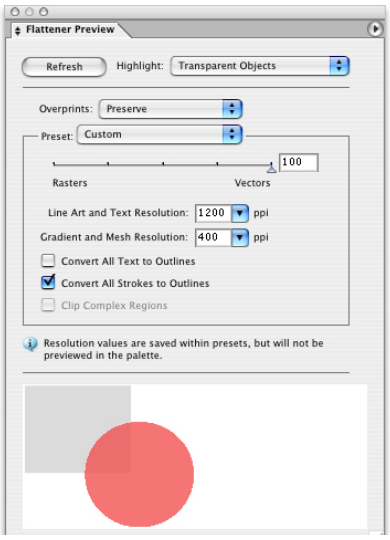
(Acrobat 8 / 9):
Display the palette using Advanced > Print Production > Flattener Preview. The preview appears in that dialog box, so check it there.

Below we focus primarily on how to check transparency in Illustrator CS2.
However, the concept is basically the same for other applications (InDesign and Acrobat).

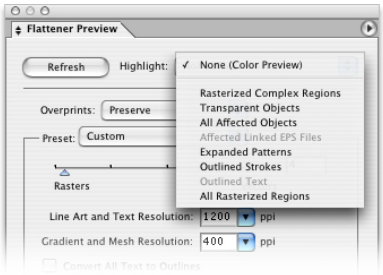
1. Select Window / TranspareAAncy Flattener Preview to display the dialog box.



2. Then click the Refresh button once to display the preview. When the preview is displayed, the Highlight: pop-up becomes active.
   When you select Transparent Objects, the objects with transparency are highlighted in red in the preview. This includes places that include transparency.



III. Other menus of Flattener Preview



This section describes other highlight menus that you can check in Flattener Preview.

[None (Color Preview)]

Displays a color preview of the artwork without any highlighting.

[Rasterized Complex Regions]

Highlights rasterized areas. There may be some differences on the borders of the areas highlighted here (color stitching caused by color matching and resolution and tonality differences,) due to the rasterization. (this differs depending on the printer driver settings and the rasterization resolution)

[All Affected Objects]

Highlights transparent objects as well as objects affected by transparency due to overlapping with transparent objects. The highlighted objects are affected by the flattening process.

[Affected Linked EPS Files]

Highlights placed-linked EPS files that are affected by transparency.

[Expanded Patterns]

Patterns affected by transparency are handled as groups of individual images and objects rather than patterns. These areas are all highlighted.

[Outlined Strokes]

Highlights outlined strokes. Highlights transparent areas of strokes because they have been converted to outlines or the Convert All Strokes to Outlines option is selected.

[Outlined Text]

Highlights text that has been converted to outlines. Highlights transparent areas of text because they have been converted to outlines or the Convert All Text to Outlines option is selected.

[All Rasterized Regions]

Highlights areas where rasterized objects overlap other objects. This means areas that could not be expressed in any other way than in PostScript or areas more complex than those specified with the threshold value in the Raster/Vector Balance.

Overprint

The overprint effect is similar to the transparency effect. However, when PDF/X-1a is used, these effects differ significantly.
In PDF/X-1a, as the transparency effect does not work, transparent objects must be flattened and then combined. On the other hand, the attributes of overprint objects will be retained.
To obtain optimal output results, it is a prerequisite that all overprint attributes be loaded, and it is important to create data with overprints in mind, from the object import stage through to the creation of the final data.

What is overprinting

Overprinting means to print the objects on one separation so they overlap the objects on a different separation in print.
It was originally intended to prevent white gaps from appearing between the background color and layered objects due to misregistration during printing.

[Color values for overprint areas]

- If the Forward separation is 0%, the Backward separation color will be output
- Even if the Forward color is 1%, the Forward color is output

(Process overprint)

	Cyan	Magenta	Yellow	Black
Output results	70	90	20	5
Forward	0	90	20	5
Backward	70	30	0	10

(White overprint)

	Cyan	Magenta	Yellow	Black
Output results	70	30	0	10
Forward	0	0	0	0
Backward	70	30	0	10

(Black overprint)

	Cyan	Magenta	Yellow	Black
Output results	70	30	0	100
Forward	0	0	0	100
Backward	70	30	0	10

Difference between overprint and transparent

When two objects overlap, the behavior of the program differs when overprinting is set for the Forward object compared to when transparency is set for the Forward object.
It is important to understand this difference in order to obtain the expected output results.

In the example in [Fig.1], the output results are the same for overprinting and transparency.
However, if C=1% is set for the Forward object, as in [Fig.2], overprinting and transparency generate completely different results.

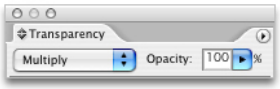
As in this example, if there are no cyan components in the Forward objects when overprinting is set, the C=100% of the Backward is visible through the Forward objects, but if there are cyan components in the Forward objects, the cyan is overprinted[*1)], so the overlapping areas of the Backward objects are no longer visible.
If transparency is set, the Backward objects continue to be visible through the Forward objects even if the same changes are added.

*1)Even if the Forward is, for example, Cyan=1%, the 1% cyan is overprinted.

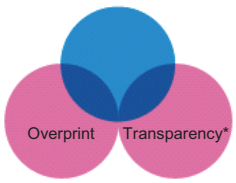
The behavior of the program is similar for overprinting and transparency, so one may be used for the other during internal processing in the application.

What is important is that if you make appropriate transparency division settings and set all overprints to load in EQUIOS, the data is processed correctly.

Transparency settings in the illustration on the right
[mode] : multiply
[Opacity] : 100%

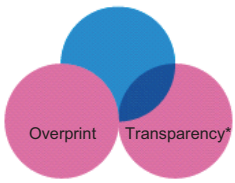


[Fig. 1]



	C	M	Y	K
Forward	0	80	0	0
Backward	100	0	0	0

[Fig. 2]



	C	M	Y	K
Forward	1	80	0	0
Backward	100	0	0	0

Although overprint is rarely set for process colors intentionally, it is important to check whether such a case has occurred mistakenly.
In addition, if it is necessary to have non-K process colors be overprinted as an intentional part of the design, using transparency to achieve the same overprint results as in [Fig. 1] makes it possible to accurately communicate the intention of the design to the prepress department.

Relation between overprints & “Color Separation (In-RIP)”

You may be able to achieve different results by switching between the “Color Separation (In-RIP)” and “Composite CMYK” options to handle various problems related to overprinting.
However, even if the results using “Composite CMYK” are more desirable for some data, the related problems will not be resolved unless overprint importing is turned on in EQUIOS.

First, what is important is to load the overprints, and you should think of the selection of “Composite CMYK” or “Color Separation (In-RIP)” options as a separate problem.

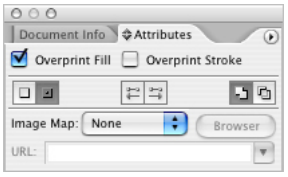
When you select color separation, if you are using a RIP that creates the separations in the RIP, such as EQUIOS, the DTP application manuals instruct you to use the in-RIP option.[*1)]
When an application in the Adobe CS or Adobe CC are used for PDF/X-1a or PDF/X-4 output, DeviceN (P42) encoding is used automatically as necessary, so you can create your output data.

*1) **<Quoted from InDesign CS2 Help>**
"If you are using a PPD file for a RIP that supports in-RIP color separation, select 'Color Separation (In-RIP)'."
<Quote from QuarkXPress 6.5 Help>
"QuarkXPress now supports DeviceN. This function makes it possible to create composite PostScript files and output using a device that supports in-RIP separation."

How to make the settings

I. Settings in the application

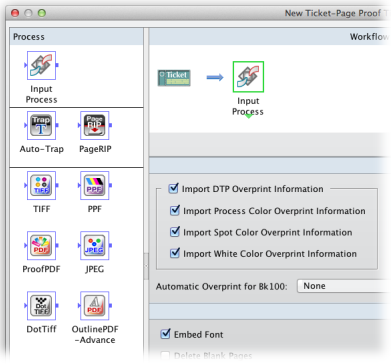
In Illustrator CS - CS5, select the object you want to overprint, and turn overprinting on in the “Attributes Palette”. In InDesign CS - CS5, this is set in the “Print Attributes Palette”.



In QuarkXPress, it is set in the “Trap Information Palette”.

II. Settings in EQUIOS

In EQUIOS, the “Overprint” function allows you to set overprinting for process colors, spot colors and white individually as well as process black overprints automatically, but when you change these settings and output, the output results differ, even for PDF/X-1a data.



How to check correct overprint

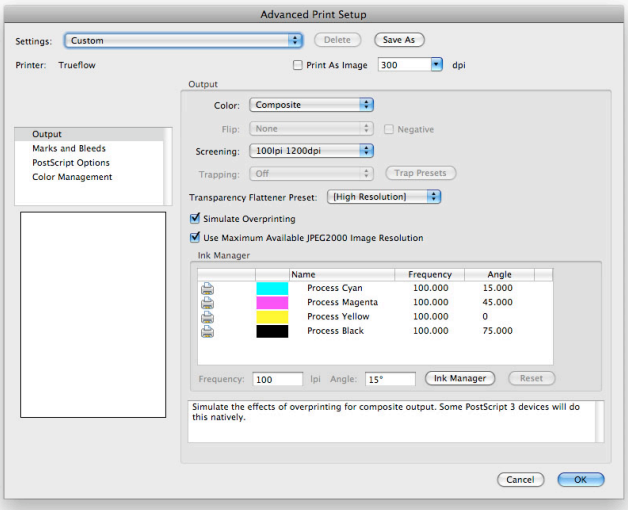
I. Checking using comp output

(checking by outputting from a printer)

If you output a comp on a color printer, the overprints may not output correctly, depending on the RIP connected to the printer. The overprints are also divided [*1)], so make the following settings to obtain the same results without using the overprint coding in the PostScript.
(if outputting to a normal color printer, select "Composite CMYK").

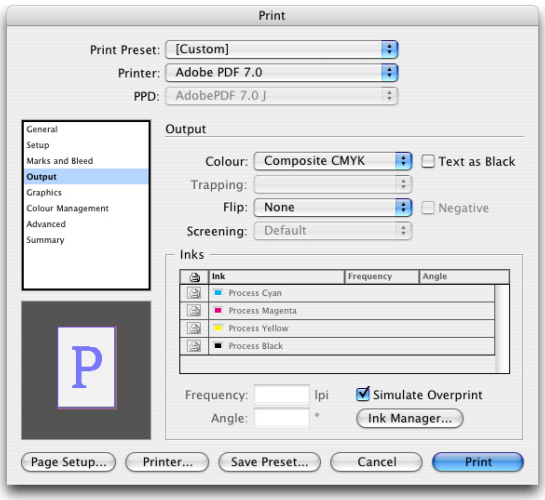
- Acrobat 7 or later

  Select Print > Advanced Print Setup > Output and then check the "Simulate Overprinting" checkbox.[*2)]



- InDesign CS or later

  Select Print > Output and then check the "Simulate Overprint" checkbox.



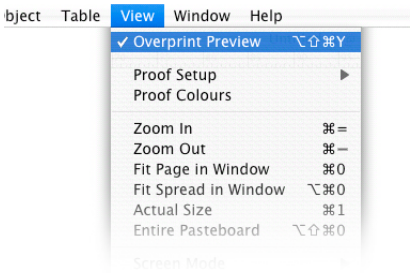
*1) See "Overview of flattening" (P6) for more information about dividing overprinted areas.

*2) Confirmation using this method divides and unites overprints as transparent objects for output, so overprint output is not actually 100% simulated. Some differences appear, such as text in the overprint areas becoming thicker.
See "V. Overprints are output as transparent objects" (P23) for technical information.

II. Checking using an overprint preview

(simulating the output results)

In InDesign CS or later, if you turn on “Overprint Preview” in the “View” menu, the “Simulate Overprint” screen is displayed, allowing you to check the overprints at the editing stage.



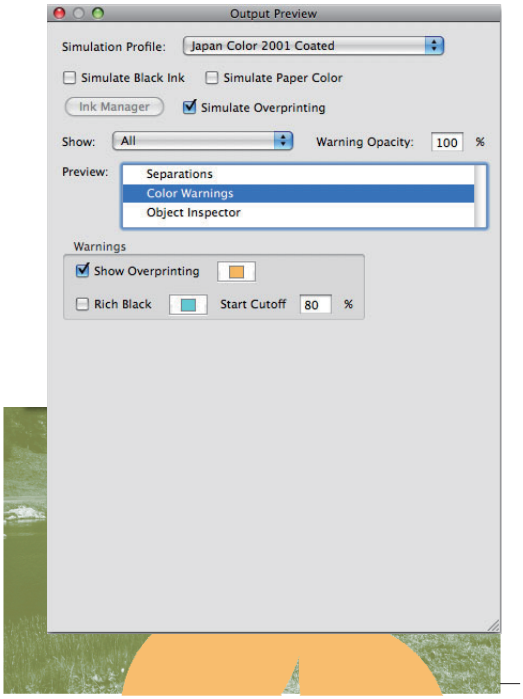
In the default Acrobat 9 settings, "Only For PDF/X Files" is set. In addition, when you open an output preview, you can see the preview even if "Simulate Overprinting" is turned on.

[Illustrator CS - CS5] : View menu / Overprint Preview : On
[Acrobat 7] : Advanced menu / Overprint Preview : On
[Acrobat 8] : Advanced menu / Print Pruduction / Overprint Preview : On
[Acrobat 9] : Advanced menu / Print Pruduction / Page Display / Overprint Preview : On
[Acrobat X] : Tool / Print Pruduction / Page Display / Overprint Preview : On

III. Checking using an output preview

(checking the areas with overprint settings)

In the “Output Preview” function in Acrobat 7 or later, turn on “Show Overprinting” to highlight the places in the PDF where overprints are set so you can easily check them.



Overprint related Points to Note

An actual example is used to illustrate the effects of overprint settings on the output and how to prevent overprint mistakes.

I. "Color Separation (In-RIP)" & "DeviceN" color handling

If you use "Color Separation (In-RIP)" or "DeviceN" to generate the colors for printing in applications such as Adobe Creative Suite or QuarkXPress, all of the colors are encoded as spot colors in the PS. ("About DeviceN" (P37))

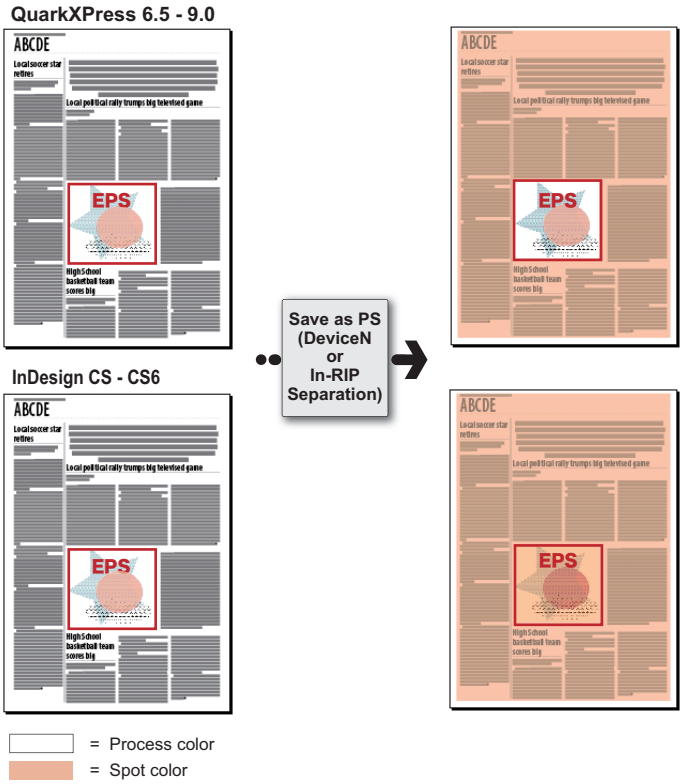
In InDesign CS or later, process colors in IllustratorEPS and other imported objects are encoded as spot colors in the PS, but in QuarkXPress 6, imported IllustratorEPS objects are not changed internally, so the colors defined there are encoded as is.

If PS containing spot colors is input into EQUIOS, process colors and true spot colors are still distinguished from each other, so the appropriate processing is applied, but that process of distinguishing them occurs after input, so it is necessary to be aware that all colors are handled as spot colors when "Import overprint" is set for input.[*1)] In other words, the "Import Process Color Overprint Information" setting for overprinting in EQUIOS is not applied, and the "Import Spot Color Overprint Information" setting is enabled.

In addition, the "Import overprint" function in EQUIOS applies overprints to the entire document, including the objects, so depending on the behavior of the individual application, it is difficult to completely control this in the RIP.

[*1)] When this happens, set overprint loading for spot colors (see "Specification of spot colors" (P28) for information about spot colors).

Spot colors within objects imported into QuarkXPress 6.5 - 8.0 are handled as spot colors, and process colors are handled as process colors.
In other words, colors within objects are handled as they are without change.



II. Automatically (unintentionally) placed overprints

Adobe Creative Suite applications may create PS encoded with the following:

- Overprint objects that are automatically created in gradient positions
- Multiple overprint objects where the process colors are mixed on output

If this type of data is processed with EQUIOS's overprint loading function OFF, the input processing cannot be performed properly. As a result, tints and gradients may be missing in part from the output or some objects may be output using totally different colors.
If automatic overprint processing is used in EQUIOS, the resulting output may be different to what was expected due to the mixture of overprint settings that are automatically set in the application and the overprint settings that are automatically set in the RIP.
If the output results cannot be completely predicted, as in this case, we do not recommend using automatic overprinting in EQUIOS.

III. Automatically overprinting K=100%

X-1a X-4

If you use transparency effects (including drop shadows), the original objects are divided and united (divided into multiple objects and some of those objects are expanded into images).
Due to the divide and unite processing, K=100% text and objects no longer remain as pure K=100% objects, so EQUIOS automatic overprinting does not function.
By setting overprint attributes in InDesign or Illustrator without relying on EQUIOS automatic overprinting, the divide and unite processing can be applied taking overprints into consideration, so you can achieve the results you expect.

IV. White overprinting

X-1a X-4

- If white overprints are set by mistake

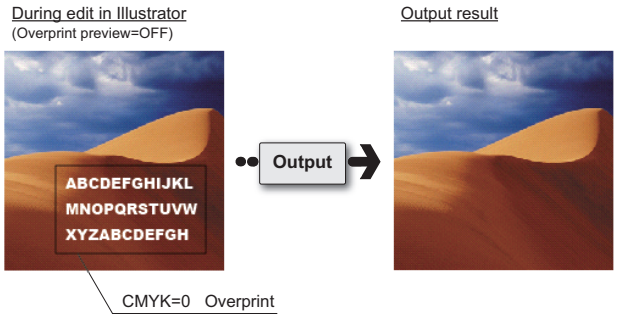
  If white overprints are set by mistake
  Generally, white overprints make objects transparent, so nothing is output. However, it is necessary to be careful because white overprints may be set by mistake.
  For example, in Illustrator CS or later, if you set white objects or text to overprint, the following warning is displayed.

However, if overprinting is set for objects and text that are other than CMYK=0 and then those objects or text are changed to white, white overprinting is applied with no warning displayed, and the text disappears on output.[*1)]

[*1)] This white overprinting generally makes objects completely transparent and nothing is output.

When the same operation is performed in InDesign CS or later, the overprint will be automatically canceled when the text color is changed to white.

If you set "Overprint Preview" mode in the application while you are editing, it is possible to view on screen how the objects will be output so you can check the output results in advance.



- Restriction of white overprinting specified in Illustrator

  When the Illustrator data, which includes the white overprint setting (tint, CMYK=0%, or overprint), is processed on EQUIOS, the overprint setting does not work properly on the K separation. The specified overprint area on the K separation is output as 0% even when the "Use white setting" checkbox (under "Overprint loading") has been marked in the import template.

  For CMYK=0% objects, 0.05% is actually set as the color value, so even if they appear to be CMYK=0%, this can cause overprint effects in the K separation.

- Standards for determining what is considered "white"

  It is not always the case that 0% areas in the data are determined to be "white".

  In the Illustrator CS or later, overprint preview, color values of 0.19% and lower are also considered to be white, and K=0.19% overprint objects disappear (in InDesign CS or later, 0.196% and lower objects disappear.

  Cases where 0.19% and lower is specified intentionally as the actual color value are unique, and it is rare that this causes any actual problems, but it is important to understand in advance the logic of how white is determined.

  In almost all DTP applications, the color depth in overprint preview processing is 8-bit, which means that 256 colors can be rendered. With a color depth of 256, the smallest step is 0.4%, and as you can see from the calculations below, K=0.19% becomes "0" and is determined to be white.

  [For 0.19%] :
  256 x 0.0019 = 0.4864 -> If you round off : "0"
  [For 0.2%] :
  256 x 0.0020 = 0.512 -> If you round off : "1"

  However, in the internal PS or PDF that is actually output, the color depth is higher at 16 bits, which means that colors are rendered using 65,536 levels. Therefore the smallest color step is 0.0015%, and anything below 0.00076%[*1)] is logically determined to be white.

  In EQUIOS, colors may be processed using either 8 or 16 bits, depending on the version and processing settings.

[*1)] The number 0.00076% is a number that is not actually rendered internally.

If overprints are set for colors with densities of about 0.19% or lower, the results may differ between the overprint preview in the DTP application and the actual output results in EQUIOS.

If we look at the example described above, where CMYK=0% objects in Illustrator actually become K=0.005%, if they are processed as 16-bit color, the 0.005% color value is left as is, but if it is processed using 8-bit color, K=0.005% is handled as K=0%, so the results are not the same.

The standard that determines "white", such as the application, the type of RIP or the processing settings, affects other results besides 8-bit and 16-bit color values, and it is difficult to predict in advance the output results of overprinting colors that are close to white. The data presented in these examples is not very "intentionally specified" data. This is important to understand before you try to learn the potential causes of problems.

V. Overprints are output as transparent objects

There are times when objects in a document for which overprinting is set are divided and united as if they were transparent objects.

As a result, the results are slightly different compared to when true overprints are output.[*1)]

[*1)] Text is outlined or converted to images.

	Saving the PS	Saving the EPS	Saving the PDF
1) InDesignCS or later	OK	NG	NG
2) IllustratorCS or later	OK	NG	NG
3) Illustrator10	OK	OK	OK

OK = Divided and united; NG = Not divided and united

As in the table above, overprints are handled as transparent objects and are divided and united if applications are run in the following ways.

1) InDesign CS or later (saved as PS)

When "Simulate Overprint" is turned on for "Output" in the "Print" dialog box

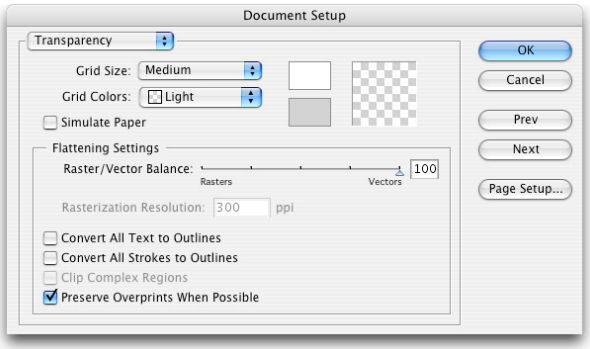
2) Illustrator CS or later (saved as PS)

When "Simulate Overprints" is set in the "Advanced" settings in the "Print" dialog box

3) Illustrator 10 (when saving as PS, EPS or PDF)

When "Preserve Overprints When Possible"[*2)] is set for "Transparency" in "Document Setup" (However, if there are no transparent objects on the page at all, the file is output with the overprints as is.)

[*2)] The default is for "Preserve Overprints When Possible" to be OFF when "Simulate Overprints" is selected.

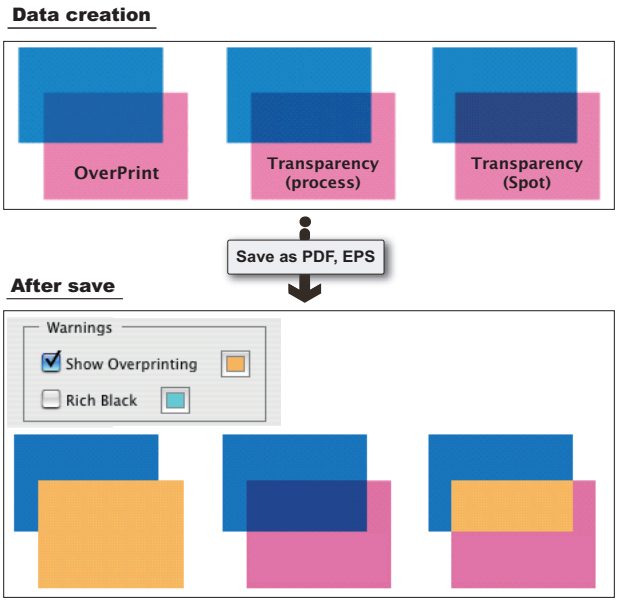


By simulating the overprints as transparent objects in this way, as described in "I. Checking using comp output" (P18) , it is possible to output comps that enable you to check overprints on a normal color printer (on most color printers, overprints cannot be output correctly if they are not converted). However, for Illustrator 10, as shown in the table, this simulation is not only for when the data is saved as PS, but it also applies to saving as EPS, so if you mistakenly set overprinting where it is not necessary, the overprints are output as if they were loaded into EQUIOS even if they were not.

VI. Transparent areas are output as overprints

X-1a

There are times when objects set to be transparent are processed as overprints during output. For example, if transparency effects are applied to objects or gradients that include spot colors, when the data is saved as EPS or PDF, overprints are applied to the areas that overlap with the transparent objects. For process colors, overprints are not applied under the same conditions, and the transparent objects are divided.



Overprint mode

What is a Overprint mode

Overprint mode (OPM) defines the operation mode for overprinting text as is and is described within the PDF.
In the RIP, the way to process the overprints related to the DeviceCMYK objects included in the PDF is changed, depending on this OPM description.
It is not necessary to be conscious of the OPM in a general DTP workflow, such as the one described in this document, but there are exceptions, and in some special PDF workflows, it may not be possible to obtain proper output if you are not conscious of this OPM.

The two overprint modes

There are two operation modes for overprint mode.

/OPM 1 : NON ZERO OVERPRINT
Interpretation of color value 0% = No color
The bottom object is made transparent

	Cyan	Magenta	Yellow	Black
Output results	**70**	**90**	**20**	**5**
Forward (DeviceCMYK)	0[*1)]	90	20	5
Backward (DeviceCMYK)	70	30	0	10

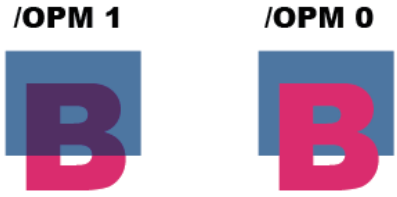
[*1)]No color (The bottom object is made transparent)

/OPM 0 : FULL OVERPRINT
Interpretation of color value 0% = There is a 0% color
0% color is painted from the top

	Cyan	Magenta	Yellow	Black
Output results	**0**	**90**	**20**	**5**
Forward (DeviceCMYK)	0[*1)]	90	20	5
Backward (DeviceCMYK)	70	30	0	10

[*1)]There is a 0% color (0% color is painted from the top)

e.g.)



The normal mode is "/OPM1", and the description in "Overprint" (P15) in this document illustrates the workflow when you select "/OPM1".

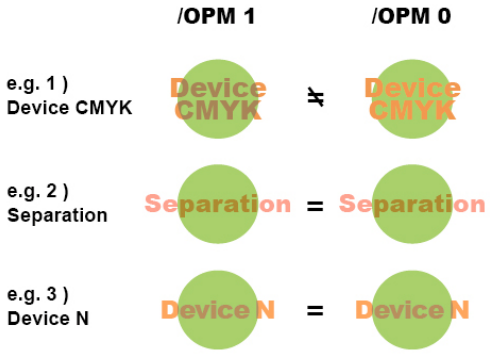
OPM affected only by DeviceCMYK

This means that if the proper overprint definition is “no separation color”, the following object colors are made transparent.
It is also possible to say that the OPM defines whether or not to interpret 0% as “no color”.
It is necessary to define a 0% color value for unwanted CMYK separations in DeviceCMYK, and it is the OPM that defines this interpretation of 0%. Therefore, in the DeviceCMYK color space, the OPM settings can be said to affect only the objects set with overprints. The OPM setting does not affect other object processing.

- Effects of OPM on different color spaces

Object color space	OPM effect	Remarks
DeviceCMYK	Affected	Because it is necessary to define a 0% color value.
DeviceN / Separation	Not affected	Because it is not necessary to define a 0% color value, since color values are set only for the required separations.
DeviceRGB / DeviceGray*1)	Not affected	Because the definition is for logical colors, not separations.

*1)DeviceGray may be converted to a DeviceCMYK K separation in the application or the RIP, and if this happens, overprints are applied and the OPM setting has an effect.
DeviceGray is converted to the DeviceCMYK K separation in EQUIOS as well.
In addition, objects defined as Gray in Illustrator 9 or later are output as DeviceCMYK (DeviceN, depending on the processing), so they are overprinted.



In the figure to the right, Device N is in back and individual color spaces are in front.

e.g. 1) Forward is [Device CMYK] ([/OPM 1] [/OPM 0] different)

	Cyan	Magenta	Yellow	Black	Spot 1
Output results /OPM 1	40	70	50	0	None
Output results /OPM 0	0	70	50	0	None
Forward (DeviceCMYK)	0	70	50	0	None
Backward (DeviceCMYK)	40	0	70	0	None

e.g. 2) Forward is [Separation] ([/OPM 1] [/OPM 0] same as)

	Cyan	Magenta	Yellow	Black	Spot 1
Output results	40	0	70	0	50
Forward (Separation)	None	None	None	None	50
Backward (DeviceCMYK)	40	0	70	0	None

e.g. 3) Forward is [Device N] ([/OPM 1] [/OPM 0] same as)

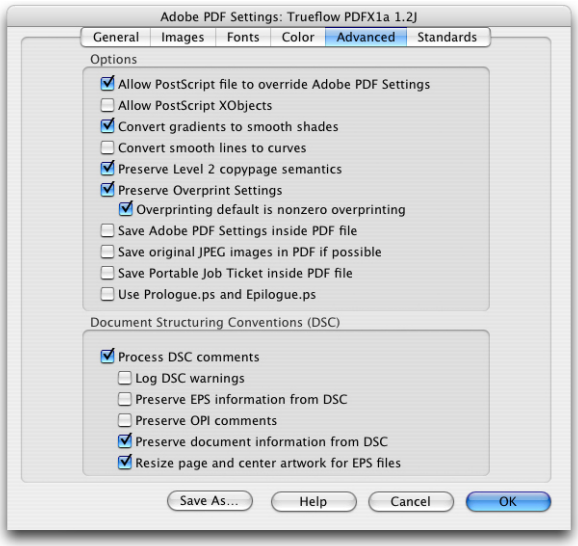
	Cyan	Magenta	Yellow	Black	Spot 1
Output results	40	0	20	5	70
Forward (DeviceN) *2)	None	None	20	5	70
Backward (DeviceCMYK)	40	0	70	0	None

*2)To specify colors that include spot colors using DeviceN format, use "Mixed Ink Swatch" in InDesign CS2 or later and "Multi-Ink" in QuarkXPress.

Overprint mode settings for Acrobat Distiller

Normally, it is not necessary to be conscious of the OPM setting, but in Acrobat Distiller, you can change the OPM setting.

The advanced setting of Adobe PDF Settings Dialogbox for "/OPM 1" is to check the "Overprinting default is nonzero overprinting" checkbox, and this is the default.
If you change this setting, there may be differences between the overprint preview in the DTP application as well as the Acrobat display and actual output results, so for normal workflows, this setting should not be changed.



Proper overprint operations

In the PostScript or PDF standard that existed before the OPM concept was defined, a prerequisite for overprint operations was an operation such as "/OPM 0".

However, this was designed to make it possible to obtain results like those from setting "/OPM 1" for DeviceCMYK overprints if the data was separated and output from Illustrator, so the output differed from when composite PostScript was separated in the RIP.
To resolve this problem, we introduced the concept of OPM as a RIP processing mode for achieving the same results from different output.

After this, specification in Illustrator was implemented in InDesign as well, and the overprint preview was also made into an "/OPM 1" preview.

This means that it is derived from the overprint specification in Illustrator, and in Acrobat Distiller 5 and earlier versions, the OPM setting was described as "Illustrator Overprint Mode". This means the same as the "Overprinting default is nonzero overprinting" in Acrobat Distiller 6 or later versions.

In a CPSI-based RIP that processes PostScript such as SCREEN's AD-810MX, the CPSI core is set to operate as "/OPM 0", but it has become possible to RIP using "/OPM 1" in the AD-810MX as necessary by setting "Apply process colors".

Specification of spot colors

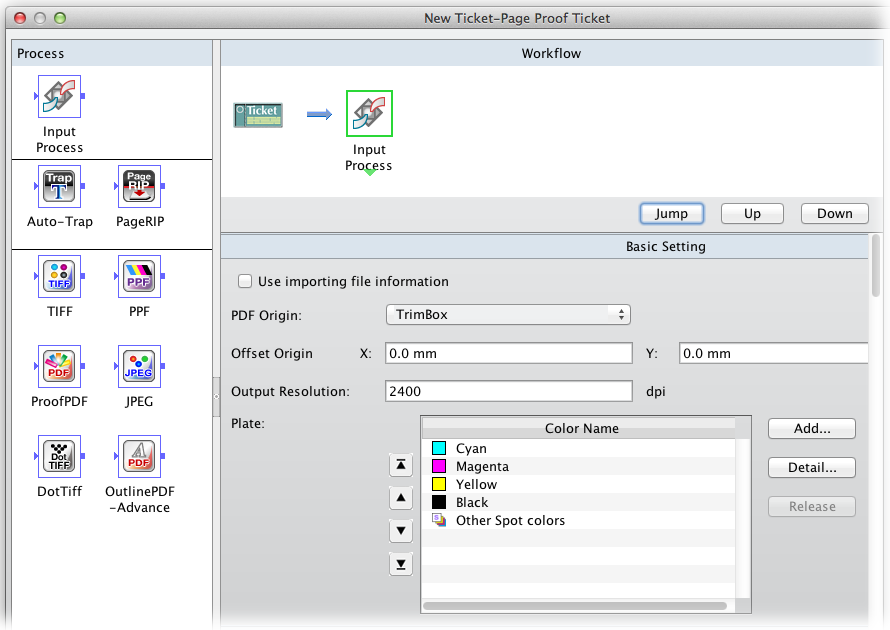
Accurately specifying spot colors

Converting data containing spot colors that were specified when the data was created into process colors during output (proxy colors) causes problems under a wide variety of conditions.
It is possible to convert spot colors to process colors and output even from EQUIOS, but it is important to set whether to convert the spot colors to proxy colors using process colors or handle them as spot color separations as they are in advance in the DTP application, and then finalize the spot color settings in the PDF.

This is because even if the input data is the same, it is controlled in the RIP, so spot colors are handled differently depending on whether the RIP is set for spot colors to be converted to proxy colors and printed or whether the RIP is set to handle the spot colors as is. Therefore, the results vary and may not appear as intended depending on the output environment.
By correctly setting how the spot colors should be handled before creating a PDF file, it is possible to output the same results in any output environment.

However, it is necessary to be careful because if there are transparency or overprint effects, as described in "II. Automatically (unintentionally) placed overprints" (P21) , transparency effects must be handled as overprints, and the overprints will not be as expected at the point when they are converted to process colors.

This is described in more detail in the next section.



Applying transparency effects and overprints to spot colors

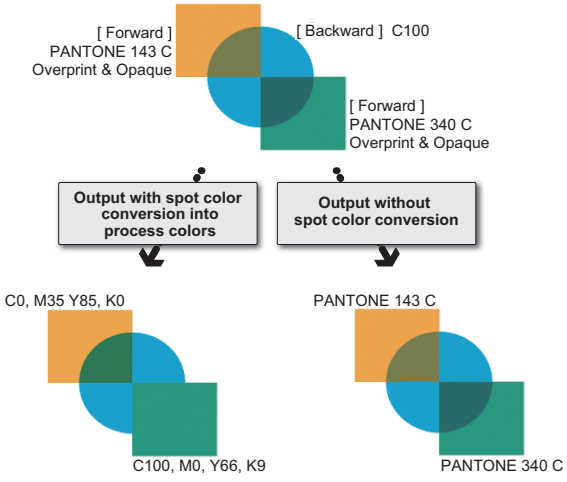
If transparency effects or overprints are applied to spot colors, the expected results are almost never achieved if the spot colors are converted to process colors in the RIP for output. If transparency effects are applied to spot colors in Illustrator CS2 or later, the following message is displayed when the data is saved as EPS, reporting the condition.

If overprints are applied to spot colors, this message is not displayed, but similarly, the data is not output as expected.
Specific cases where transparency effects and overprints are used are shown below, but the spot color settings are only made at the stage when the data is created for the areas where spot colors are actually output, and loading spot color information and overprints into the RIP is only one method of solving the problem.

Applying overprints to spot colors

X-1a X-4

When overprinting true spot color separations, spot color inks are printed in the areas where the spot color objects and other objects overlap using separate separations, so the output is a mix of both types of objects. However, the results are completely different when those spot colors are converted to process colors and overprinted as compared to when they are output as spot color separations.



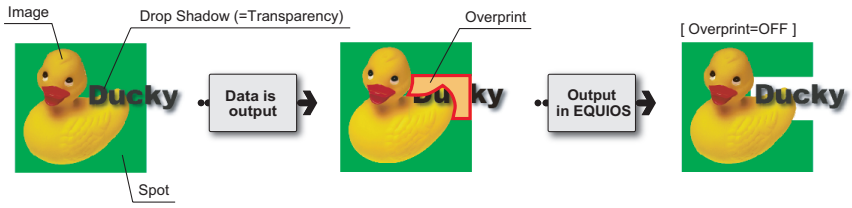
It is important to use the colors that are generated when the spot colors are converted to process colors at the stage when the data is created, and always turn on “Overprint Preview” to check the output results in advance. If you convert to process colors in EQUIOS, you cannot check the output results in advance, so it is not possible to guarantee that the output will be the same as what appears on screen.

Spot color transparency effects

X-1a

As described in "II. Automatically (unintentionally) placed overprints" (P21) , generally if objects with transparency effects overlap objects with spot colors, some of the transparency settings are converted to overprints and the data is saved.
As described in "Applying overprints to spot colors," if objects with transparency effects are unexpectedly converted to overprints in this way, the results are completely incorrect. To achieve the expected results, the rule is to output spot colors as spot colors using separate separations.
Of course it is critical to set up the overprint loading and spot color loading correctly in the RIP, and if they are not loaded, this will cause serious problems in the output.

e.g.)



As shown in the example above, it is necessary to be careful because problems occur not only if transparency effects are set for spot color objects themselves, but also when there are other transparent objects.
If you use the colors specified as process colors in advance rather than spot colors, these types of problems do not occur.

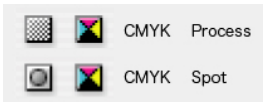
Ways to convert spot colors to process colors

To resolve these problems, we introduce two ways to convert spot color objects that are not to be output using spot color separations into process colors in the DTP application.

When the colors are converted, the behavior of the transparency effects and overprints may yield unexpected results. It is necessary to check this behavior by displaying overprint previews.
You cannot check them if you convert to process colors in the RIP. If you convert spot colors to process colors, be sure to always check the conversion results at the stage when the data is created, before RIP'ing.

I. [Swatch Options] setting

Icons on the Swatches palette

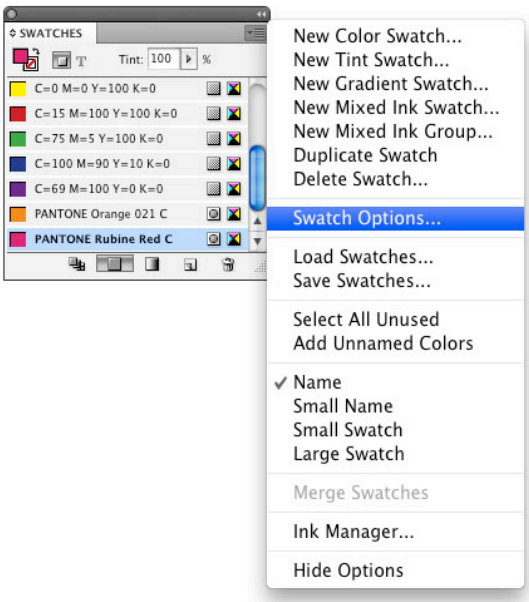


In this example, the setting procedure is described using InDesign CS5. The procedure is the same when InDesign CS - CS4 or Illustrator CS - CS5 is used.

When you import other application data that includes spot colors into InDesign, the definitions of the spot colors used in the InDesign data can be changed, but they can only be changed to InDesign's color format.
To modify a color in the original image, you must define the color in the application that was used to create the image.

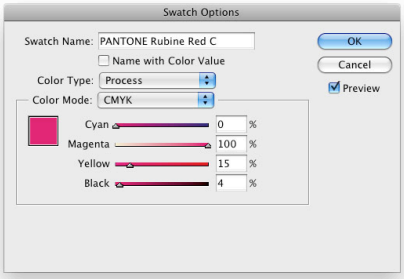
Convert the colors in the document using “Swatch Options”.

1. It is possible to check the spot color state and change the settings for each color from the Swatches palette.
   Select “Swatch Options...” from the submenu (or double-click the swatch to be edited in the Swatches palette) to display a dialog box.

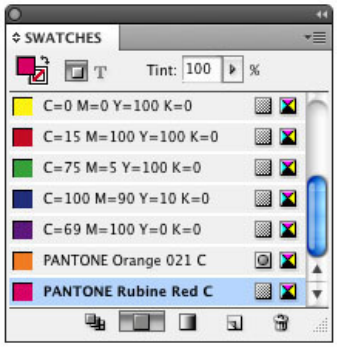


2. In the Swatch Options dialog box, set as shown below and then click the OK button.

Colour Type	Process
Colour Mode	CMYK



3. Check that the icon to the right of the list has been changed.
   This completes the setting.



II. [Ink Manager] setting

In this example, the setting procedure is described using InDesign CS5. The procedure is the same when InDesign CS or later or Acrobat 7 or later is used. You can make the same settings in the "Print" dialog box in Illustrator .

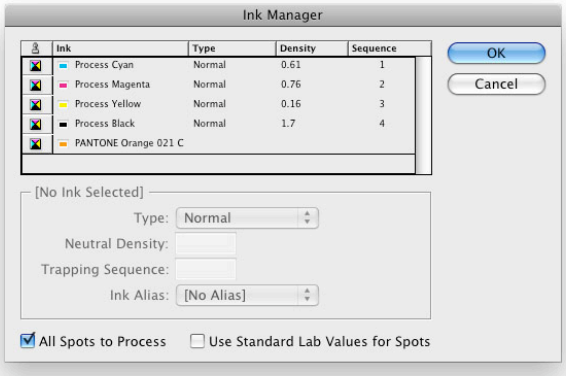
Changes to the colors in the document set in “Ink Manager” are not made, but rather the colors are converted during output. With this conversion, spot colors in imported Illustrator data can also be converted to process colors at the same time.
Of course it is also possible to set batch conversion of all of the spot colors to process colors for each separation.

1. Display the “Ink Manager” dialog box in one of the following ways.
   - Swatchs palette menu
   - Separations Preview menu
   - [Output] in “Print” dialog box
   - [Advanced] in “Export PDF” dialog box

In "Ink Manager", it is also possible to output spot colors with different names, such as "Green1" and "Green2" using the same separation.

2. Icons are displayed to the left of the individual colors.
   If you click the spot color icon on the left, it changes to a process color icon. This finishes the setup.
   In addition, if you want to convert the spot colors to process colors in batch, turn on “All Spots to Process”. All of the spot colors are converted to process colors.

If Illustrator EPS format data is imported into InDesign, objects are already divided at the point that the EPS is created, and converted to overprints after that, so unexpected results may occur.
If unexpected colors are appear in the overprint preview with these ink management settings, it is necessary to edit the original data in Illustrator.



Bleed

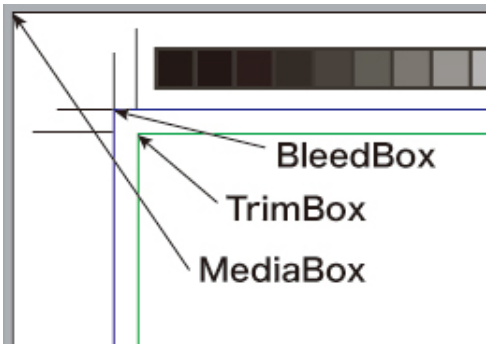
One of the PDF/X requirements is that “the media size and the trim size or art size must be properly defined in PDF (bleed is optional)”. Even if these settings are not defined correctly, the PDF/X-1a data passes Preflight in Acrobat.
However, it is important to set the specified items in the DTP application and the RIP in order to correctly output the PDF/X-1a data, including the bleed area. This section presents information that should be noted in order to output the PDF/X-1a data correctly.

TrimBox / BleedBox /MediaBox

It is possible to add information such as TrimBox (trim size), BleedBox (bleed size), and MediaBox (output media size) to PDF.
When PS is output from a DTP application and then it is used for imposition in another program, PS will be positioned with reference to the origin of the finished page. Therefore, the information for page origin, size, and bleed area is important.

- Box settings and application notation

		InDesign	QuarkXPress
TrimBox	Trim size (actual final page size)	Page size	Page size
BleedBox	Bleed size (actual page size + bleed area)	Bleed	Bleed
MediaBox	Media size (output media size encoded in PS)	Paper Size	Paper Size



Support in each application

What is important if you output PS from a DTP application and impose it in different software is the page origin and size as well as the object bleed area information.

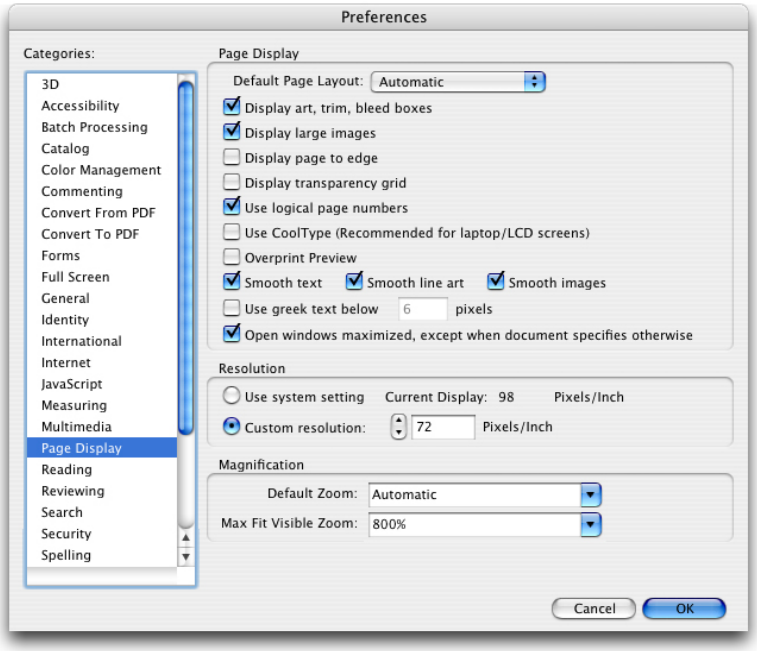
In InDesign, it is possible to create PDF with TrimBox and BleedBox information (the resulting PDF is the same as when you convert PS output from InDesign to PDF in Distiller 5 or later).
Also, in QuarkXPress 6 or later, when PS is created with register marks, EQUIOS can import the TrimBox and BleedBox information.
Using this page information, DTP applications can import/export the origin and bleed information correctly without the paper size setting being changed from “Auto”, regardless of whether it is a double-page spread or single-page data.

	PS	PDF
InDesign CS or later	OK	OK
Illustrator CS or later	OK	OK
QuarkXPress 6.5	OK	OK *1)
QuarkXPress 7.0 or later	OK	OK

*1) The Japanese version is supported by the PDF Boxer XTension, which is distributed by Quark, Inc. (English version 6.5 has already been supported.)

Confirmation on Acrobat 8 or later

You can visually check the individual Box settings in Acrobat 7 or later Professional.
Since this function is off as a default setting, select “Preference” - “Page Display” from the menu, and then turn on “Display art, trim, bleed boxes”. Once the Acrobat function is activated, each area will be displayed using different colors.
As shown in the figure in “TrimBox / BleedBox /MediaBox” (P33) , the TrimBox (green line), the Bleed box (blue line), and the MediaBox (paper area).



Setting the “PDF Origin” on EQUIOS

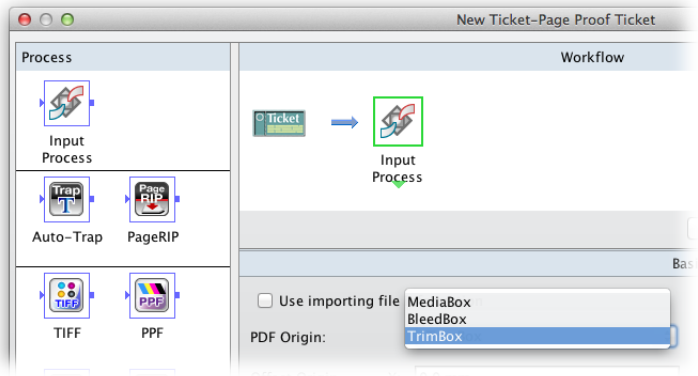
When PS or PDF data is input, of the three parameters that are accurately encoded, the box that will be the origin is specified.

[TrimBox] : Loads the PS or PDF data using the trim size.

[BleedBox] : Loads the PDF data using the bleed size.

[MediaBox] : Loads the PDF data using the media size

Specify the PDF origin during the EQUIOS input processing.
If you input PS or PDF output from a supported application, you can set TrimBox as the PDF origin.



Points to note on ArtBox in Illustrator CS

The figure below shows PDF created in Illustrator CS using Acrobat 7. The red line represents the ArtBox.

Even when objects are positioned outside the bleed area, as seen in this figure, all ArtBox areas will be included in the paper size to be determined. Therefore, be aware that the PDF's paper size (MediaBox) is larger than the paper size that was set in Illustrator CS.

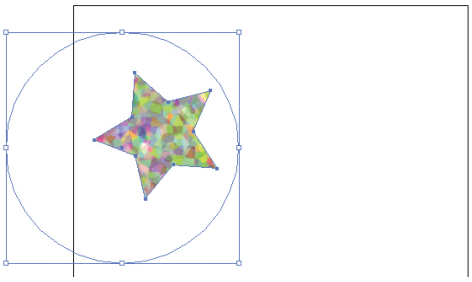
Also, note that if there is an object that is not actually viewed or output (for example, when a clipping mask is used), the object is also included in ArtBox.

If PDF is RIP'ed or impositioned with reference to a box other than TrimBox, the page origin may shift.

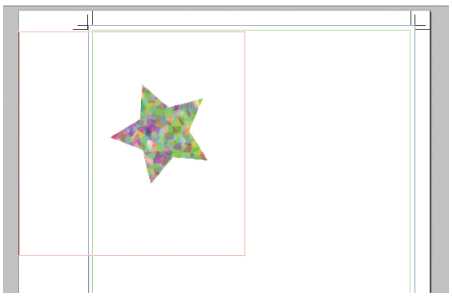
If these PDFs are RIP'd or imposed, process them in EQUIOS using TrimBox as the origin. If you use other than TrimBox, the page origins may not match.

- Creating PDF in Illustrator CS

The figure on the right shows an example of when a round object that is positioned beyond the bleed area is clipped into a star shape.



- Displaying in Acrobat 7



In-RIP separation workflow

If you output PDF directly from an application without going through PostScript, the PDF file itself becomes an all-color composite, so an in-RIP separation workflow is assumed.

We formerly recommended that you select “Composite CMYK” in the earlier color separation settings when setting up PostScript output. This has changed, so now we recommend that you select in-RIP color separation or DeviceN for Adobe Creative Suite and QuarkXPress 6 or later.

In-RIP color separation and DeviceN are functions for creating PostScript assuming that color separation is performed in the RIP, and they are implemented to obtain the same results as when color separation is performed in the application, even when using a composite workflow (possible to convert to normal PDF).

Merits of In-RIP separation

In various applications, an in-RIP separation workflow has the following advantages compared to using composite CMYK settings.

QuarkXPress 6.5 or later

In earlier versions of QuarkXPress, a separation workflow was assumed, so for a composite CMYK workflow, the colors were converted to proxy colors. In QuarkXPress 6.5 or later, if PostScript is created from the following types of data using DeviceN format, spot colors can be processed without converting them to proxy colors.

- QuarkXPress blends that use spot colors
- Gray TIFFs (colorized TIFFs) in which spot colors were specified
- Multi-ink colors that include spot colors

InDesign CS or later

Color separation is performed correctly even on duotones from Photoshop 5.0 or later that are used in InDesign CS or later.
In addition, it is also possible to correctly output traps created in InDesign.
If you select “Application Built-In” in the “Trapping” pull-down menu in “Output” in the “Print” dialog box, you can perform simple trapping, but it is necessary to be aware of the following.

- It does not work unless you select in-RIP color separation.
- Trap widths are restricted to a maximum of four points.
- It is disabled for imported EPS files and is only enabled for InDesign objects.

You can set up trapping details using “Window” - “Output” - “Trap Presets”. Unnecessary traps are output if you make these settings incorrectly, so it is necessary to be careful. Traps are not reflected in direct PDF output from InDesign.

About DeviceN

DeviceN is a device color space in PostScript or PDF that has been supported from PostScript 3 and PDF1.3. There are other device color spaces, including DeviceGray, DeviceRGB and DeviceCMYK, but DeviceN is the color space that allows you to specify multi-ink colors or multi-tone colors (including duotones) that use more than the four colors of the basic color space.

If you output PostScript 3 by specifying in-RIP color separation or DeviceN from various applications, the DeviceN code is used internally in the PostScript. By converting this PostScript file into a PDF 1.3 or later file using Distiller, DeviceN is encoded in the PDF file.

In addition, in PDF that is directly output from an application, DeviceN encoding is used for duotones or spot colors matched using mixed ink swatches.

The special characteristics of DeviceN become evident if you compare it to typical DeviceCMYK as another device color space.

With DeviceCMYK, it is always necessary to specify the color values for the four colors. If you print with solid black, the specification is simply "CMYK=0,0,0,100%". In other words, it is necessary to explicitly specify 0% even for colors that are not used.

To express solid black using DeviceN, the specification becomes "(Spot Color) Black=100%", and the reserved name of "(Spot Color) Black" is interpreted as the process color "Black". In this case, if you use DeviceCMYK, the colors C, M, and Y are handled as "None". No other color specification is necessary. The differences between these methods of specification become important when you process overprints.

In addition, it can be said that that the expression of spot colors using DeviceN is universal.[*1)]
In PostScript or PDF that includes DeviceN encoding, process colors are also defined as spot colors. Spot colors and process colors are both printed the same way, and whether or not the color name is a reserved name is what determines whether a color is a spot color or a process color.

[*1)] Spot colors cannot be expressed using DeviceCMYK.

For example, there are times when the process color cyan is defined as the spot color called "Cyan", and if the reserved name "Cyan" is used in normal processing, there is no problem because it is processed as the process color "Cyan". However, if spot colors and process colors are processed differently (see "II. Settings in EQUIOS" (P17)) , there are times when it does not work as expected.

However, it is not always the case that DeviceN encoding is required if you use spot colors.

If you print using a single spot color and you use the Separation color space[*2)] encoding, you can express it even using a composite CMYK PostScript output specification.
The DeviceN color space in PDF1.3 supports up to 8 colors, and in PDF1.5 it supports up to 31 colors (which includes process colors). This number of colors is of course "the number of colors used in a single object", and is not "the number of colors used in the entire document."

[*2)] The Separation color space is supported from PostScript 2 and PDF1.2.

In-RIP separation workflow using DeviceN

The advantage of DeviceN discussed earlier is that you can expect the benefits of a PDF workflow or a PostScript workflow.*1) It is possible to express all of the colors in a single piece of data, and all of the separations can be computed at the same time, so processing can be faster.

*1)PostScript output to RIPs that support color separation processing

You can create "data created for in-RIP separations" that takes into consideration the output of all of the separations using DeviceN. In addition, to output all of the functions in the application completely using an in-RIP separation workflow, you must using DeviceN format encoding.

However, if the output device is PostScript Level 2 or the DTP application is QuarkXPress 3.3/4.1 and DeviceN is not supported, it is also true that in-RIP separations are output by specifying composite CMYK.

In this type of DTP environment, a pre-separation workflow*2) is what should be specified in QuarkXPress 3.3/4.1, but if you use in-RIP separations, the only method is to output composite CMYK.

*2)Output of color separations from a DTP application rather than in-RIP separation

With composite CMYK output, there are restrictions for output in QuarkXPress and InDesign, so various fixes were made in the RIP and several restrictions*3) were overcome.

*3)QuarkXPress spot color gradations, etc.

However, it is not necessarily the case that everything can be completely output.

One condition for taking advantage of the benefits of DeviceN is that it should be supported in both the RIP and the DTP application.

Currently, both the RIP and the DTP application support DeviceN, and it has become possible to use a PDF workflow that uses the appropriate DeviceN as necessary.

In a PostScript workflow, we recommend that you select in-RIP color separation or DeviceN. In a PDF workflow, it is assumed that you are using an in-RIP separation workflow, so DeviceN is used automatically.

Color management and RGB workflow

RGB workflow and PDF/X-4

In Acrobat, use the "PDF/X-4" preset and verify. See "Verification and confirmation of PDF" (P67) for more information.

You cannot use RGB images as they are when using PDF/X-1a. As a result, if you use an RGB workflow, a prerequisite is that you use PDF/X-3 format that recognizes the use of RGB format or Lab format with an ICC profile embedded in the PDF/X-1a data.

However, there are several restrictions, such as that in PDF/X-3, it is necessary to convert objects with transparency effects from RGB to CMYK and flatten them, so in actual operations, you cannot use transparency effects.

It is now possible to include transparency effects in PDF/X-4, so in EQUIOS, we recommend using PDF/X-4 for RGB workflows.

Handling CMYK in an RGB workflow

In EQUIOS, it is possible to use a function that converts RGB=0,0,0 to K=100, but if you use a DTP application, you must not create data that relies on this function.

Even if it is called an RGB workflow, not all of the page objects are necessarily rendered using RGB data. For example, K=100 black text is more desirable than RGB=0,0,0, and it is difficult to reverse the coding for M=100 and Y=100 colors accurately using RGB, so it is desirable to print using solid M and Y inks.

As a result, the RGB workflow discussed here means to recognize an "RGB and CMYK mixed workflow".

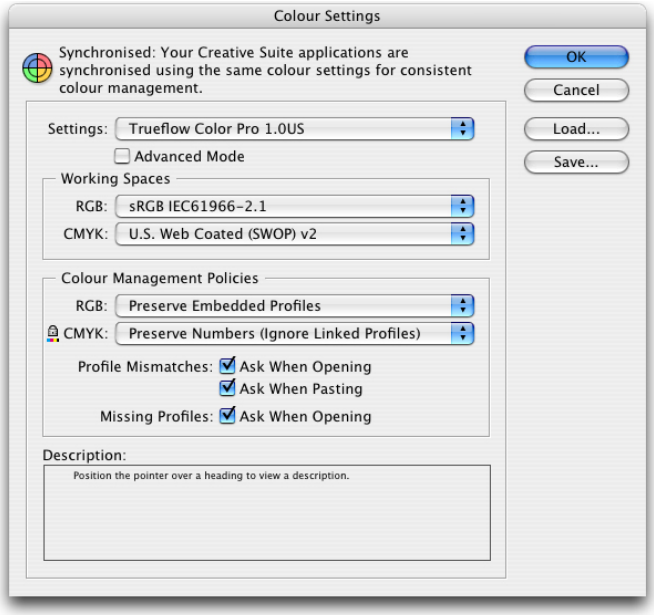
In addition, RGB data is converted to CMYK using an appropriate method, and it is necessary to process that CMYK data so that those values are not changed.

Color management in Adobe Creative Suite and Creative Cloud

*1)See "Color setting file" (P80) for information about these color settings files.

In Adobe Creative Suite and Creative Cloud, the color management functions have been enhanced, and we always recommend using color management.
However, it is possible to prevent making any changes to CMYK images in the color management setting, so quality-guaranteed CMYK images can be used as with earlier versions.
A color settings file has been prepared for Adobe Creative Suite for a PDF/X-1a workflow in EQUIOS.*1)
A "EQUIOS Color Pro 1.0EU.csf" and "TEQUIOS Color Std 1.0EU.csf" file are available for the European version and a "EQUIOS Color Pro 1.0US.csf" and "EQUIOS Color Std 1.0US.csf" file are available for the US version, and using these settings makes it possible to preserve the CMYK image values.

For the European version, select "EQUIOS Color Pro 1.0EU.csf" and "EQUIOS Color Std 1.0EU.csf".
In the European version, "CMYK:" is "Euroscale Coated v2".



Avoiding automatic color conversion

If RGB images are used in various DTP applications, the RGB is converted to CMYK based on ICC profiles appropriate for the output settings embedded in the images as well as output device profiles, but it is undesirable from an image quality management standpoint to inadvertently convert them, so it is important to be aware that they have already been converted when preparing the files.

How to resolve RGB image color issues

To output professional-quality results using an RGB image, it is important to define a correct ICC profile for the RGB image. This ICC profile allows you to know the information on the color space used for expressing the image. This information is required when the image is converted into a CMYK image.

In addition to the color conversion based on the ICC profile, image quality adjustment and adequate sharpness adjustment should be performed depending on the image type to obtain better-quality results.

There are two major color management solutions for positive image quality management in the operation using RGB images. With either method, you can achieve significant results by avoiding automatic conversion.

1. Converting an RGB image to a CMYK image before using it
   RGB images taken by a digital camera, for example, are converted into CMYK images using ColorgeniusDC before layout. The resulting image quality is equivalent to those created by a professional scanner.
   In this case, the is compliant with a PDF/X-1a workflow, and the methods, points to note and restrictions are the same as for a CMYK-only workflow.
2. Performing color conversion during RIP computation
   RGB images are used for layout after being set with color adjustment instructions. The actual color conversion is performed during output computation in the RIP.
   In this case, PDF/X-1a is not used in the DTP application, so “RGB workflow PDF” is created.

Recipe and color profile

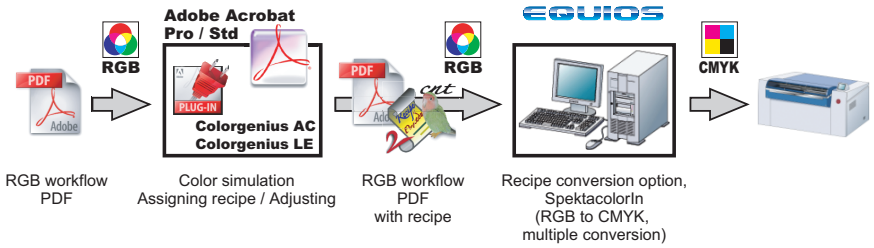
A recipe file defines how the images will be converted. Images are converted based on ICC profile information, which indicates the color space used, and the quality defined in the recipe file.

Recipe file information includes subjects, finish keyword, and quality definition data. A system that incorporates a recipe file and a recipe conversion engine (i.e., Colorgenius DC, Colorgenius ID, Colorgenius LE, Colorgenius AC, EQUIOS) allows transmission of the correct information on intended and preferred image quality. Therefore, anyone can perform high quality setup easily.

Standard_sharpG6.cnt


JapanColor2001Corted.icc

Processing procedure of the RGB workflow on EQUIOS



Operating requirements

To use this RGB workflow, EQUIOS must meet the following requirements.

- PolishedInput option
- Recipe conversion option

I. Create RGB workflow PDF

If you use a DTP application to create data in an RGB workflow, see "Creating PDF/X Files in InDesign" (P58) and "Creating PDF/X Files in Illustrator" (P63) to create the PDF data.

When creating the data, it is important to consider the description of the next section "Points to note when creating RGB workflow PDF" (P44) when performing the procedure.

II. Recipe assignment in Colorgenius AC (LE)

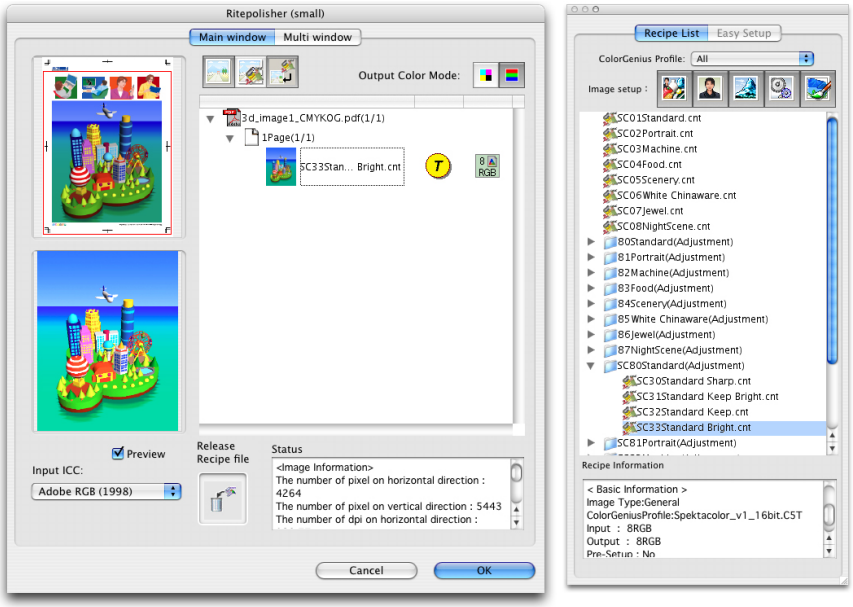
The Acrobat plug-ins Colorgenius LE (freeware) and Colorgenius AC are software products that allow you to add image quality conversion instructions for RGB images.*1) They allow you to specify parameters for color conversion using what are called “recipe files” for each image in a PDF file* and embed those settings in the PDF file as recipe files.*2) At this stage, the original images are preserved as they are, and the final output image quality is determined.

With this workflow, the RGB images are not converted through the entire process from layout to final output rendering, so the RGB image quality does not deteriorate no matter how many times you change the recipe files.

For details on the operations of Colorgenius LE and Colorgenius AC, refer to the manuals for each product.

*1)Colorgenius LE, which is available for free from our web site, allows you to select an appropriate recipe file from several that are already prepared and simulate output on screen by applying those files.
In Colorgenius AC, you can make fine adjustments to existing recipe files as well as create new ones.

*2)Use the recipe for RGB to CMYK conversion when using data in the recipe conversion option, and use the recipe for Spektacolor (RGB to RGB conversion, recipe name with "SC" prefixed) when using data in the SpektacolorIn option.



III. Processing in EQUIOS

In EQUIOS, the PolishedInput recipe conversion option recognizes the recipes embedded in the PDFs and makes it possible to convert RGB images using the recipes to print high quality images.

Furthermore, when digital RGB images are used, with a variable scale depending on layout, it is possible to output these images with optimal sharpness effect applied in their actual sizes after changing the magnification.

For details on the use and points to be noted regarding the support of these RGB workflows, refer to the information provided from each product.

Points to note when creating RGB workflow PDF

X-4

See "PDF/X-4 workflow" (P3) for more information.

In the RGB workflow, points that are different from the conventional CMYK workflow must be noted when preparing data and editing a document as well as when outputting data.

I. Format and ICC profile

To save a file with an ICC profile embedded, it is recommended to use Adobe PDF (.pdf), Illustrator (.ai), Photoshop (.psd), InDesign (.indd), TIFF, and JPEG formats. However, InDesign CS - CS5 can recognize the ICC profile that is embedded in Photoshop EPS.
In InDesign CS2 - CS5, while the ICC profile for each imported image can be changed, an ICC profile that is embedded in a Photoshop EPS format file cannot be changed.

II. RGB workflow using Illustrator

In earlier versions of Illustrator, it was possible to mix RGB images and CMYK images by positioning them using image links[*1)] but as in the "PDF" (P75) points to note, images positioned by linking are flattened, and there are problems with striping, so it is not practical.
In Illustrator CS3 or later, this problem was fixed, so by positioning RGB images using links, it is now possible to mix RGB images and CMYK images in Illustrator.
ICC profiles are embedded, so it is necessary for positioned images to also be JPEG, TIFF or Photoshop native format (.psd).
If you use this workflow, you must be sure to either export the page data in PDF/X-4 format or position it in InDesign CS3 or later in native Illustrator format as is.

[*1)] RGB data that can be mixed with other data is limited to images placed in Illustrator, and other objects created in Illustrator are encoded using the color space defined by the Illustrator color mode. Normally they are created in CMYK color mode.

III. Overprint

In the same manner as that of the transparency effect described above, regarding overprint, the data may not be processed as you expected when different color modes are present on the same page and special care must be taken when creating data.

- RGB objects and overprint

  Since overprint is an independent process that is applied for each separation used for printing, it is only available for CMYK and spot color.

  Basically, overprint cannot be set to RGB objects that use a color value. However, overprint can be set to a spot color that will be printed using a different separation.

  In the actual processing, RGB objects are converted to CMYK objects and they are affected by overprint processing.

  The detailed processing results are shown in the table below.

  Since overprint is an independent process that is applied for each separation used for printing, it is only available for CMYK and spot color.

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  In the actual processing, RGB objects are converted to CMYK objects and they are affected by overprint processing.

The detailed processing results are shown in the table below.

		Forward (Set Overprint)		
		CMYK	Spot color	RGB
Backward	CMYK	OK	OK	NG
	Spot color	OK	OK	OK[*1)]
	RGB	OK[*1)]	OK[*1)]	NG

[*1)] RGB objects are converted to CMYK objects and overprint processing is applied to them.

The "NG" symbol does not indicate that overprint is not applied, but indicates that the result is undefined. This means the result may vary depending on the algorithm of the RGB to CMYK conversion. For this reason, using overprint with the "NG" symbol is not recommended.
For example, the overprint is applied in the following situations even in the RGB workflow.

- Overprint can be applied for the overlapping spot color object and RGB object regardless of the overlay priority.
- Overprint can be applied for the black text of the CMYK mode laid out on the RGB image.

IV. Preparation of appropriate RGB images

In order to perform color conversion correctly in the RGB workflow, it is necessary to define a correct ICC profile for an original image. If an ICC profile is not defined, default profile "sRGB IEC61966-2.1" will be defined in Adobe Creative Suite 2 that is set up to be used in conjunction with EQUIOS.
In addition, Colorgenius LE and Ritefinisher, which allow you to set recipe files, handle RGB format images, so it is necessary to prepare all Lab format images as RGB images.

Effects of RIP internal processing

Overview

The chapters above have mainly provided technical descriptions related to the DTP application's internal behaviors. This chapter describes how the input data will be processed after it has been RIP'ed.

Necessity to understand the RIP internal processing

Since input data are processed in EQUIOS in the way considered to be the most efficient so they can be output as expected, it is not necessary to know the details of the RIP internal processing for normal workflows.
However, when some conditions occur at the same time, the expected or theoretically based output results cannot be obtained and there are times when this is caused due to the RIP internal processing.
It is not necessary to keep in mind the descriptions in this chapter in most cases. However, understanding the RIP internal processing described in this chapter will help you identify and resolve any problems causing processing results not to be output as expected or theoretically based. These situations were difficult to understand with only the previous information.
The following outlines the items described in this chapter.

Interaction of transparency effects with overprints

Transparency effects and overprints have an effect on each other in DTP applications and this affects the resulting PDF output.
Similarly in RIP internal processing, the interaction of transparency effects and overprints may cause unexpected output results. The following shows two examples.

Device link profile processing
→ (P49)

There are times when the CMYK to CMYK conversion is performed during RIP computation to save inks or finely adjust the colors for each printer. This conversion is performed using a device link profile[*1)].
This section describes measures that can be taken in EQUIOS to properly handle the K separation in the device link profile and ICC profile workflows. It also describes the processes added for EQUIOS, accompanied by a description of the color conversion option.

[*1)] The descriptions are mainly for the device link profile. However, as they also apply to the ICC profile in many cases, the ICC profile is also included in the descriptions.

Differences between Conventional PS/PDF and Advanced PDF

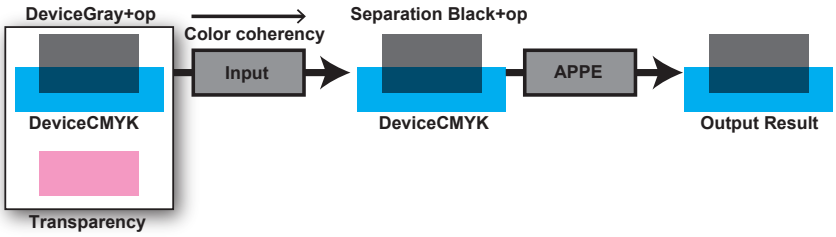
When transitioning to the PDF workflow, it is possible to use Conventional PS/PDF in EQUIOS to process PDF files. However, to maintain process compatibility in the future, it is necessary to promote the transition to the Advanced PDF processing.
In EQUIOS, the greatest care has been taken to prevent the occurrence of any difference in the output results after the transition to the PDF workflow and thus a major problem rarely occurs. However, once you understand the differences between these two processing methods and the details of the "greatest care" that had been taken, you will be able to fix a problem if it occurs.

Interaction of transparency effects with overprinting

Transparency effects and overprints have an effect on each other in DTP applications and this affects the resulting PDF outputs as described in “V. Overprints are output as transparent objects” (P27) and “VI. Transparent areas are output as overprints” (P28).
Similarly as a result of the RIP internal processing, there are times when the transparency effects have an effect on the overprint processing and when the overprint objects are output as transparent objects as described below.

DeviceGray Overprint object with a transparent object

In the computation using the Adobe PDF Print Engine, the overprint setting for DeviceGray objects is disabled when it is processed according to the PDF standard, as described in “Differences due to two settings” (P61).
However, if there is a transparent object within the same page (spread), it also affects the overprint processing for any object that is placed in a position unrelated to the transparent object. As a result, the overprint setting for the DeviceGray object is enabled even though it should be disabled according to the PDF standard.
If there is no transparent object within the same page (spread), the DeviceGray object does not overprint the transparent object as specified in the PDF standard. The behavior of the DeviceGray object varies depending on the presence of a transparent object, regardless of how the objects overlap.



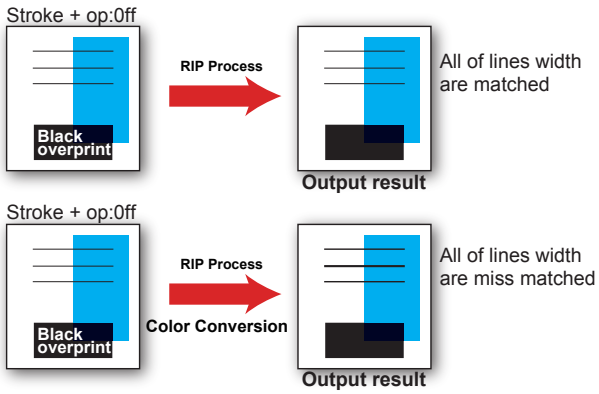
*1)The resulting colors of the DeviceGray objects both related and unrelated to the transparent object are kept the same.

Even if only a single transparent object is included in the same page, all DeviceGray objects will be replaced with Separation Black in order to maintain color consistency when the transparent object is processed in the input processing.*1)
When the DeviceGray object is placed on the same page as the transparent object regardless of their layout positions, it is replaced with Separation Black, during the input processing. Separation Black clearly indicate the color space for printing.Separation Black clearly indicate the color space for printing*2). As a result, overprint is applied for the object even if it was originally a DeviceGray object.

*2)DeviceGray indicates the light intensity as with DeviceRGB. Therefore, Grayscale 100% is black on DTP applications, but “0” is black and “255” is white in the PDF coding.

Overprints are computed as transparent objects

When the page (spread) to be processed includes an overprint object and the color management setting is activated in the output processing, problems occur. For example, the keylines, including those irrelevant to the overprint object, are output in bold and the same stroke objects are output using different stroke widths. These problems will not occur when the color management setting is not activated.



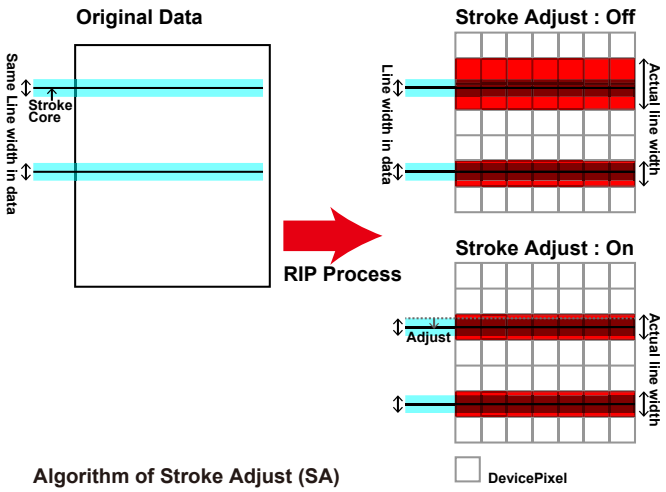
This is because the color management in the output processing uses the CMYK to CMYK conversion. For example, in the case of black overprint, the color that is originally K=100% will be converted to a color including not only the K separation but also the other color separations as a result of the color management.[*1)] Therefore, the overprint object cannot be reproduced by merging the color separations. Instead, the object is converted to a transparent object and then merged. Since the keylines are converted to outlines due to the flattening of the transparent objects, the stroke width cannot be guaranteed and the problems occur.
However, in a way, this process is necessary for merging colors.
The issue regarding this process is that all objects, including those that are not overprint objects, are processed as transparent objects and this causes problems on the keylines of all separations and also worsens the operation performance.[*2)]

[*1)] Although K=100% can be maintained by selecting "Keep Black 100% after Conversion" in "Output color setting" (P59), the black area is still the target for flattening.

[*2)] In EQUIOS Version 1.04 or later, only the objects related to overprint objects are processed as transparent objects, therefore the stroke width problem only occurs in these areas.

Stroke adjustment

Stroke adjustment (SA) is a process to move the logical layout position of a stroke by a maximum of 0.5 device-pixels in order to keep the stroke width consistent at any layout position.
As a result, there are times when the actual physical position of the stroke has been moved by 1 device-pixel, however, the stroke widths become consistent. (As it is actually impossible to paint the area for 0.5 pixels only, the amount of movement is rounded to 1 pixel during the RIP computation.)



Algorithm of Stroke Adjust (SA)

Device link profile processing

There are times when the CMYK to CMYK conversion is performed during RIP computation to save inks or finely adjust the colors for each printer. This conversion is performed using a device link profile[*1)].

For the color conversion using the profile including the device link profile, proper handling of the K separation is particularly necessary. So it is important to know the internal computational behavior. This section describes measures that can be taken in EQUIOS to properly handle the K separation in the device link profile and ICC profile workflows[*2)]. It also describes the processes added for EQUIOS, accompanied by a description of the color conversion option.

[*1)] With the normal ICC profile conversion, colors are once converted to the colors of the Lab color space and then converted to the output colors. Conversely, with the device link profile conversion, input CMYK colors are directly converted to the output CMYK colors using the profile for mapping.

[*2)] The descriptions are mainly for the device link profile. However, as they also apply to the ICC profile in many cases, the ICC profile is also included in the descriptions.

Anticipated problems

The following presents the problems that may occur if the K separation is not handled properly in the device link profile and ICC profile workflows.

Halftone dots appear in the black solid area.

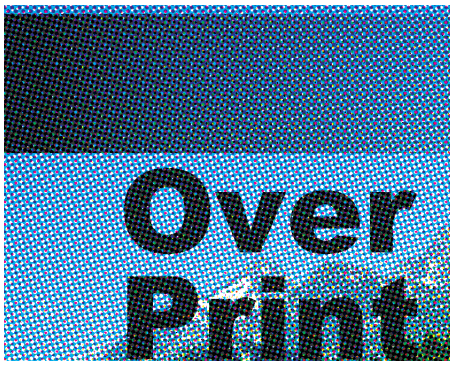
If an ICC profile or improper device link profile is used and the RIP settings are inappropriate, the K separation for the black solid area will be faint and halftone dots appear in the area after output.

When an ICC profile is used, colors are first converted to the colors of the Lab color space and then converted to the output colors. If the colors are computed using the algorithm, it is not possible to keep the black solid.

When a device link profile is used, direct mapping from CMYK to CMYK is performed. As long as the setting for black solid is appropriate, halftone dots will not appear in the black solid area after output, however, it is not always so.

Black solid must be output as black solid.

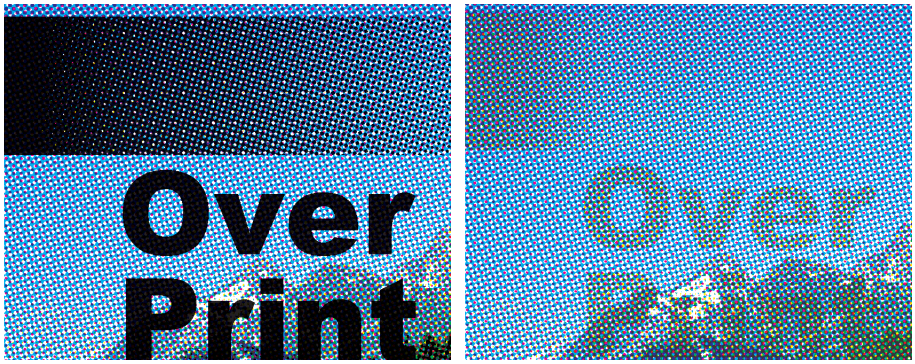
Inout PDF



Output DotTIFF

Colors overprinted by black are changed.

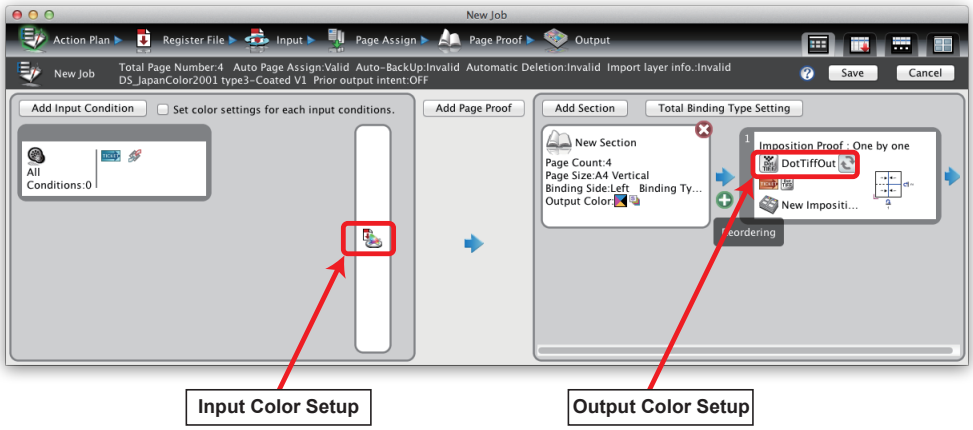
Even when a device link profile in which the handling of black solid has been properly set is used, if color conversion is performed in the RIP, the colors will be converted based on the presence of K=100%. This occurs regardless of the color management settings in the device link profile. So when the image includes black overprints, the background CMY separation colors will also be affected by the color conversion. For example, when black overprint is used for text in order to obscure any misregistration of the K separation, if the text is visible as a result of the color conversion applied to the CMY separations, the effect of black overprint will be halved.
When black overprints are used, the K separation must be set so that it does not affect the CMY separations.



Output DotTIFF　　Output DotTIFF(CMY only)

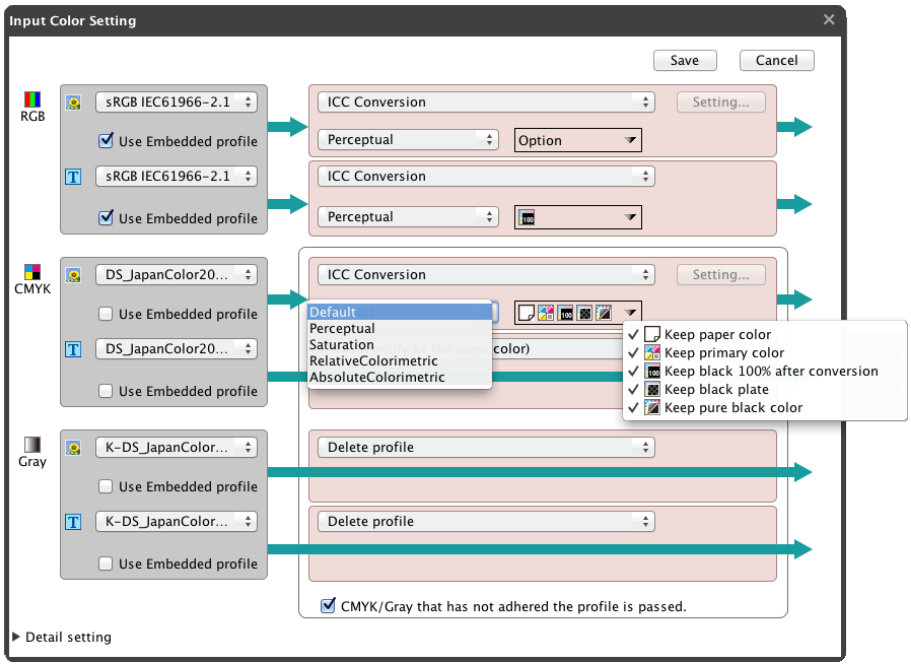
Color settings for input and output computation

In EQUIOS, color conversion is available in the input computation and output computation, however, it should not be necessary to perform color conversion in both computation processes. Conversion should be performed in either process depending on the characteristics of the target data.
In the device link profile processing, you can select whether color conversion is performed during the input or output computation depending on the design and input data format.
As described further in “Input color setting” (P58), color conversion during the input computation allows more flexibility in the settings, however, the input data must be very accurate. In most cases, the color conversion settings made during output computation have fewer points to note and also bring better results.

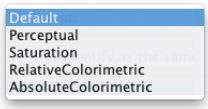


Conversion methods and options

In addition to handling the K separation as described above, EQIUOS allows you to make various settings to improve the output quality in the workflow that includes color conversion.
The following describes the function of each option using the GUI for the input color setting.



Conversion methods



- Default

  Converts colors with the intent specified in the document. If no intent is specified, conversion is made using relative matching.
- Perceptual

  Performs color conversion so that the colors will look as natural in the converted color space as they did before conversion.
- Saturation

  Performs color conversion so that the in-gamut colors are left unconverted and the out-of gamut colors are converted by lowering the luminance level while preserving the saturation as much as possible. This method is suitable for illustrations and CG images that contain gradients.
- Relative Colorimetric

  Performs matching for color differences based on the media white point (colorimetric value of the monitor white for monitors or colorimetric value of the paper white area for printers). As a result, no ink will be used on the paper white area even if the color for the paper white area is changed as a result of the color conversion.
- Absolute Colorimetric

  This is a matching method applied when the white point has been set as a fixed value. Since the white point value is fixed, there are times when halftone dots appear in the paper white area if the color for the paper white area is changed as a result of the color conversion.

Options

*1)To simulate the color tone for newspaper, for example, disable this option.

- Keep Paper Color

  Depending on the profile setting, there are times when the paper white area for which no ink should be used (all separations are set to 0%) is slightly colored due to the effect of the color conversion*1).
  When this option is enabled, colors will be converted leaving the paper white area as it is. Also, some surrounding highlight areas will be blended into the paper white areas. This option should be selected when "Absolute Colorimetric" is selected for the conversion method and you do not wish to simulate the base color of the paper to be output.
  The paper color is also saved when "Relative Colorimetric" is selected for the conversion method, however, this conversion method affects the entire color representation. On the other hand, this option enables output with minimum hue deviation in the highlight areas.

- Keep Primary Color

  This option should be selected for a color consisting of only one of the CMY components (e.g., tints and color charts). Colors are converted while preventing high density areas from including another color component, and also allowing low density areas to include other components gradually as density decreases (so that the color is no longer a primary color) to make these colors blend into their surrounding colors.

*2)Since the problem of "Colors overprinted by black are changed." (P55) that occurred when "Keep Black 100% after Conversion" was selected for output color conversion has been fixed in EQUIOS, there is almost no problem if you select this option.
This fix is not applied to "Keep Black 100% after Conversion" selected for input color conversion that converts colors for each object.

- Keep Black 100% after Conversion*2)

  This option is a function to minimize the adverse effects due to the fact that when the CMYK to CMYK conversion is performed using an ICC profile, four colors are used in the conversion results even if the data to be converted included the K separation only. When color conversion is performed, the areas in which only the K component is 100% will be reproduced with the K separation kept at 100%, and other areas will be converted to the CMYK colors. If these areas are adjacent to each other, the border will be blended to prevent any banding from appearing. This option is effective for expressing black text. Halftone dots will not appear in the K=100% text as a result of color matching.
  (For input only) When this option is selected for RGB input, the color of RGB=0, 0, 0 is converted to the K=100% color.

- Keep Black Plate (for input only)

  When this option is selected, the CMY separation colors will be converted without the K separation. For the K separation color, the primary correction (tone change) will be applied independently so that it is converted to the K separation that does not affect the converted CMY colors. As the output color conversion is applied to the entire data and this is too effective, this option is enabled only for the input color conversion that is applied to each object.

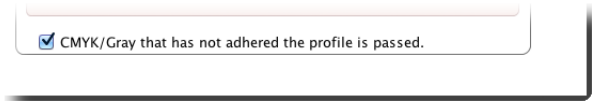
- Keep black only (for EQUIOS only)

  When the data include the K separation only, the primary correction (correction only for K separation) is performed to prevent other separations from being included.

- CMYK/Gray that has not adhered the profile is passed. (For input only)

  When this checkbox is selected, color conversion is not performed for the CMYK/Gray objects with no profile attached.
  It is recommended to deselect this checkbox for the workflow with a device link profile. When this is selected, colors will not be converted for the CMYK images with no profile attached*3).
  When this checkbox is not selected, colors for all objects are converted according to the settings.

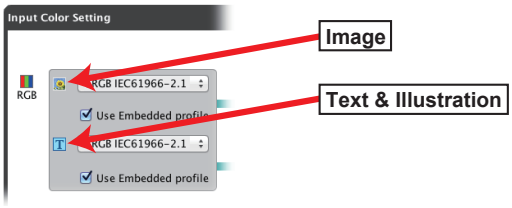
*3)When using a device link profile, only the "CMYK/Gray that has not adhered the profile is passed." option can be selected in the input color setting.
For the output color setting, "Keep Paper Color" and "Keep Black 100% after Conversion" can be selected.



Input color setting

In the input processing, as colors are converted before a RIP rendering, it is possible to process each element of the objects in the data.
EQUIOS provides high flexibility for color conversion and option settings because it allows you to make individual settings for “images” and “texts and illustrations”[*1)].

*1)Note that, on the other hand, when the texts and figures are converted to images as a result of the processing such as flattening of the transparent objects, there are times when banding appears between the converted and unconverted areas.



Solutions of input color setting

In EQUIOS, the problems of “Halftone dots appear in the black solid area.” (P54) and “Colors overprinted by black are changed.” (P55) cannot be prevented in the input color setting[*2)].
The program has been improved in EQUIOS so that the objects with overprinting set are not subject to the input color conversion but they will pass through it[*3)], and these two problems can be prevented by selecting “Keep Black 100% after Conversion” for the input color setting.

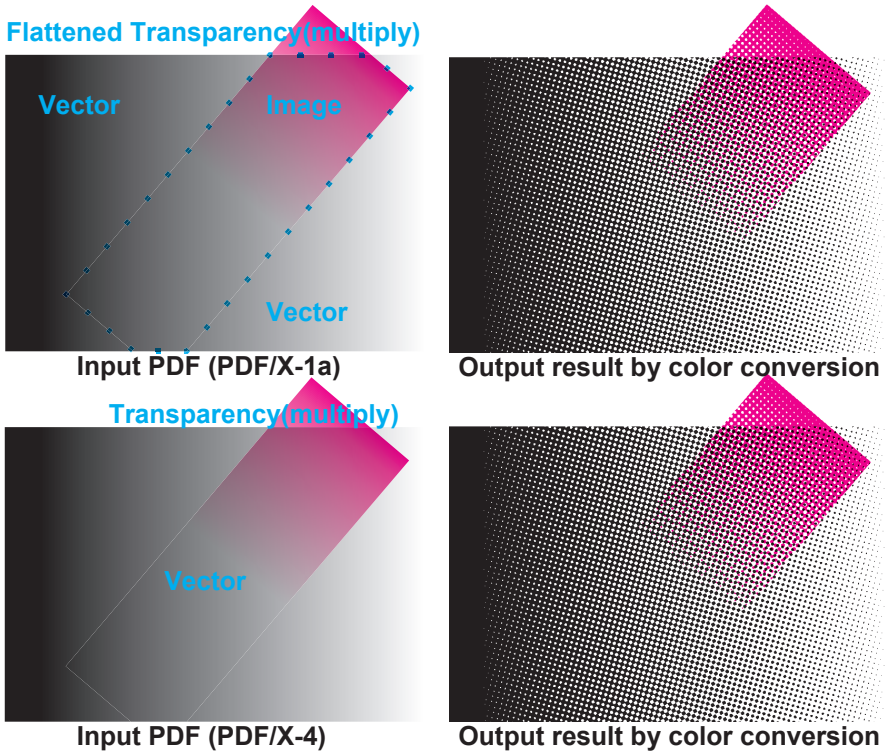
*2)The problems can be prevented using the output color setting.

*3)This process can be enabled or disabled by the internal setting.

Note for input color setting

There are times when banding[*4)] appears between the area in which texts and figures are converted to images as a result of the flattening of transparent objects and the area in which no conversion is applied. To prevent the banding from appearing, flattening of transparent objects must not have been performed in the data to be processed.

*4)The illustrations on the right show examples of when a device link profile was set only for images that provide high ink-saving efficiency and data created as a PDF/X-1a file, in which transparency must be flattened, were input.

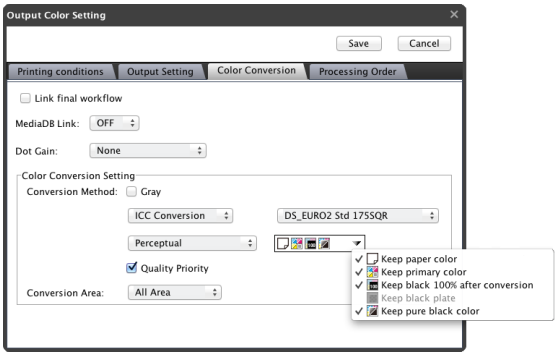


The data should not only be a PDF/X-4 file. The transparency effects must be retained by all Illustrator data in the file. Therefore, the data must be created as described in “Recommendations for direct output of PDF and native import” (P6)[*5)]

*5)When it is not possible to fully control the input data, we recommend that you apply the countermeasure for banding using the output color setting.

Output color setting

In the output processing, colors are converted for the entire data after the RIP rendering. It is not possible to process each object (e.g., text) as with the input color conversion. However, if you are certain that the data can be output correctly without color conversion, the color conversion is simply performed for the entire output results. This does not require very precise data, like the one for input color conversion, to be created.

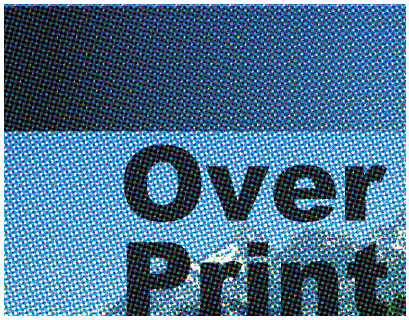


Solutions of output color setting

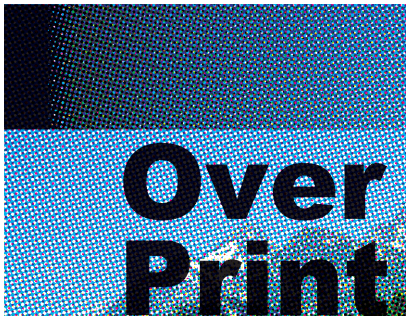
In EQUIOS, a device link profile that takes the black solid areas into account must be prepared to prevent the problems of “Halftone dots appear in the black solid area.” (P54) and “Colors overprinted by black are changed.” (P55) in the output color setting. In addition, you can prevent the problems by selecting the “Keep Black 100% after Conversion” and other necessary options.
In EQUIOS, the definition for black solid areas in the provided device link profile is changed so that the color conversion can be performed without affecting the CMY separations and also some surrounding shadow areas are blended into the black solid areas. This is the “Keep Black 100% after Conversion” operation in EQUIOS.

Note for output color setting

In EQUIOS, performance will drop when output color conversion is performed for data that includes a large number of overprint objects, as mentioned in “Overprints are computed as transparent objects” (P52).
In EQUIOS, there are times when the tone of the shadow areas is slightly changed as a result of the processing in which the definition for black solid areas is changed. This is identified in the output of gradient overprints, for example, however, the quality of the output results is better than when the “Keep Black 100% after Conversion” option is disabled.



EQUIOS
Keep Black 100% after Conversion:Off



EQUIOS
Keep Black 100% after Conversion:On

Differences between APPE and Conventional RIP

Adobe PDF Print Engine and conventional RIP'ing

In Trueflow SE, you can choose between the earlier method of Trueflow RIP'ing (Conventional PS/PDF) and the method using the Adobe PDF Print Engine (Advanced PDF). Although the Adobe PDF Print Engine is used for all computations in EQUIOS, it is also important to understand the difference from the conventional method.

In Trueflow, it has become possible to process PostScript even in Advanced PDF, so Advanced PDF and Conventional PS/PDF can be used the same way.

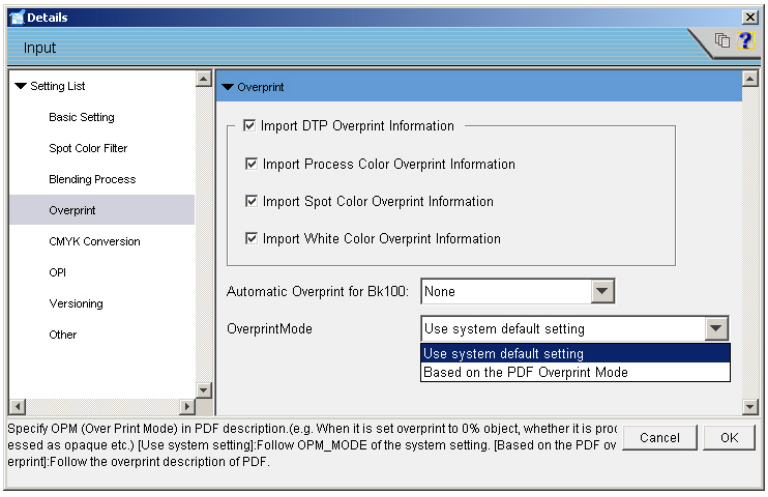
There are almost no discernable differences between these two processing methods,[*1)] but for particularly different overprint processing, there are rare times when differences can be detected. However, if you understand the following points, almost no differences are evident when you check them.

- There are many cases where the target design (for example, overprinting of gradients) is normally not set.
- Advanced PDF is correct as the PDF standard, and it also matches the display in Acrobat, so it is possible to check in Acrobat in advance.

*1)With strict digital plate inspection, there are times when differences of just a few dots, which do not affect the quality, are detected.

Trueflow "Overprint mode" settings

In Conventional PS/PDF, there are settings called "Overprint mode", but these settings do not just mean the overprint mode in the PDF standard (see "Overprint mode" (P25). They also mean matching Conventional PS/PDF results to Advanced PDF results.



In Advanced PDF or EQUIOS, there are no "Overprint mode" settings. Normally, overprints are handled using the "Based on the PDF Overprint Mode" setting.

Processing using “Use system default setting” in Trueflow

When the overprint mode setting is “Use system default setting”,[*1)] operations based on different PDF standards should be used for objects for which “Differences due to two settings” (P56) is indicated.

The special characteristic of this setting is that even if the overprint mode is set inappropriately, the data appears to match and is processed in a way close to what the user expects.

In addition, several special processes are included to preserve exact compatibility for processing OutlinePDF, so if you are using an OutlinePDF workflow, use this setting.

[*1)] The "system settings" are Trueflow internal settings that define OPM processing in detail. These system settings are described for standard status.

“Based on the PDF Overprint Mode” processing in Trueflow

If “Based on the PDF Overprint Mode” is specified in Conventional PS/PDF, processing compliant with the PDF standard is run.

For Advanced PDF, this setting does not exist, and RIP'ing is normally done according to the PDF standard. RIP'ing is also based on the formal specification described in “Overprint mode” (P25) for overprint processing.[*2)]

The special characteristic of this setting is that processing is run according to the standard, so this setting should be used if PDF output from a regular DTP application is output as it looks, overprints are present, or if you try to output special PDF, such as with the overprint setting encoded as “0”. In other words, for output other than OutlinePDF, we recommend that you use this setting.

[*2)] Automatic overprint settings are used during input processing, and if you set up input so that overprints are not imported, the PDF overprint settings are changed at that point, so OPM also does not output according to specification.

Process Mode	Trueflow “Overprint mode” setting	Result of processing	Acrobat Display
Conventional PS/PDF	Use system default setting	Conventional PostScript	Unmatched [*3)]
	Based on the PDF Overprint Mode	The PDF standard	Matched
Advanced PDF	(no setup)		

[*3)] It is not that they do not match at all. Differences only occur in the areas described in “Differences due to two settings” (P56) below.

Differences due to two settings

The differences in output between these two settings are summarized in the table below.

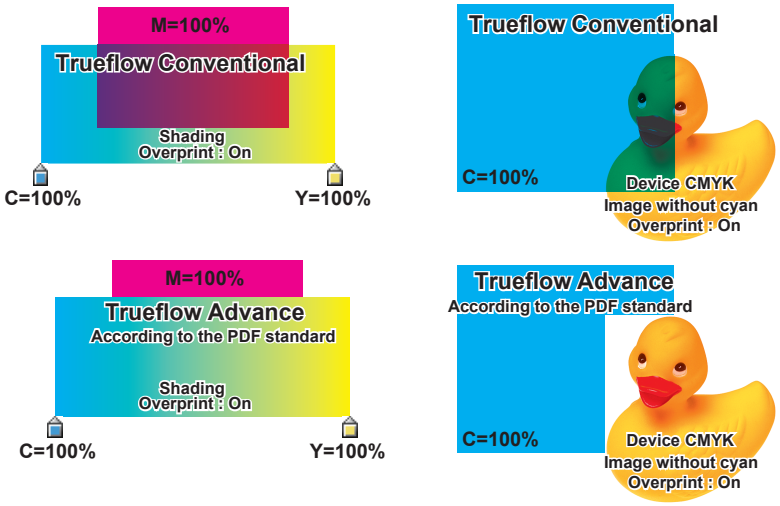
If “Based on PDF Overprint Mode” is set for all of the objects, output is performed correctly according to the PDF standard.

Trueflow “Overprint mode” setting	Use system default setting	Based on the PDF Overprint Mode
Overprint DeviceCMYK gradients	valid	invalid
Overprint DeviceCMYK images	valid	invalid
Overprint DeviceCMYK patterns	valid	invalid
Overprint DeviceGray objects	valid	invalid
Overprint mode setting specified in PDF	valid: /OPM 1 process	basis of the PDF
White overprint using DeviceN or Separation data	Drop out white object	Output as white
Overprints on DeviceRGB or spot colors converted to proxy colors[*4)]	CMYK basis process	invalid

[*4)] For example, RGB = 0, 0, 0% overprint objects are processed as K=100% black overprint objects by using input ticket settings.

The differences between DeviceCMYK gradients and images are shown as examples in the

illustrations below.



Process-independent overprint coding

As shown in the examples above, it is very likely for objects such as those marked as "Differences due to two settings" (P56) to be interpreted differently depending on the RIP, there is a lot of device-dependent encoding, and in the latest DTP applications, processing to avoid this type of code is built in.

For example, according to the PDF standard, overprinting of DeviceCMYK gradients, patterns, and images is disabled, and by overwriting with DeviceN, which can clearly specify the presence of separations in the DTP application, it is possible to render overprints as much as possible.*1)

In this example, encoding the data using DeviceN does not depend on the overprint processing specification in the RIP, and the same overprints can be rendered regardless of the overprint mode settings as well.

In an In-RIP separation workflow, which is currently popular, it is necessary to clearly specify In-RIP separations from the DTP application, and it is possible to replace them with DeviceN in order to clearly specify that.

This is one reason why it is important to understand DeviceN in a PDF workflow that requires In-RIP separations.

When Illustrator 10 and InDesign 2.0.2 were in use, they were part of a transition period for clear interpretation of overprints. In the RIPs used in Trueflow at that time, which included conventional RIP'ing, overprint processing that took this situation into account was implemented, so now there are times when the results are different from those from the current RIP.

In actual production work, it is possible to create PDF that depends little on the output environment by replacing overprints of these objects with transparent objects and not using DeviceGray.

*1)You can render overprints with little device dependence using OutlinePDF the same way, and no differences appear between the overprints generated using these two settings.
Conversely, for OutlinePS/EPS, the "Use system default setting" setting must be used in Conventional PS/PDF (in other words, output is highly device-dependent), so Separation Black and DeviceN (Black only) input data is converted to DeviceGray and encoded as OutlinePS/EPS.
If that data is processed according to the PDF standard, overprints are ignored because Black is specified as DeviceGray in the input data.
If these are black overprints, this can be avoided using automatic overprints in Trueflow. To enable black overprints other than those, you can avoid the problem by converting OutlinePS/EPS to OutlinePDF in advance to replace DeviceGray data with Separation or DeviceN data.

Running PDF/X

This chapter describes the procedure, points to be noted, and restrictions on creating PDF/X files that are to be used in EQUIOS.

Creating PDF/X Files in InDesign

You can directly create PDF/X files that are optimal for EQUIOS using the procedure below.

If an RGB image is included, apply an appropriate countermeasure while referring to "Color management and RGB workflow" (P39) so that the required quality will result. Do not output the RGB image without a countermeasure applied.

Refer to "Versioning workflow" (P5) when running versioning that uses a layered PDF and performs computation with the Adobe PDF Print Engine.

The following presets are available in EQUIOS for PDF/X output. See "Recommendations for direct output of PDF and native import" (P5) for more information.

[for EU]

- EQUIOS X4 2010_1_EU.joboptions (for PDF/X-4 CS5.5 or later)
- EQUIOS X4 2008_1_EU.joboptions (for PDF/X-4 CS3 - CS5)
- EQUIOS X1a 2001_1_EU.joboptions (for PDF/X-1a CS3 or later)

[for US]

- EQUIOS X4 2010_1_US.joboptions (for PDF/X-4 CS5.5 or later)
- EQUIOS X4 2008_1_US.joboptions (for PDF/X-4 CS3 - CS5)
- EQUIOS X1a 2001_1_US.joboptions (for PDF/X-1a CS3 or later)

This section describes how to create PDF/X-4, but only the differences from what appears in "PDF/X-1 output", which assumes you are using PDF/X-1a for output, are written in the sidebar. (We recommend the PDF/X-4 output.)

Preflight in InDesign

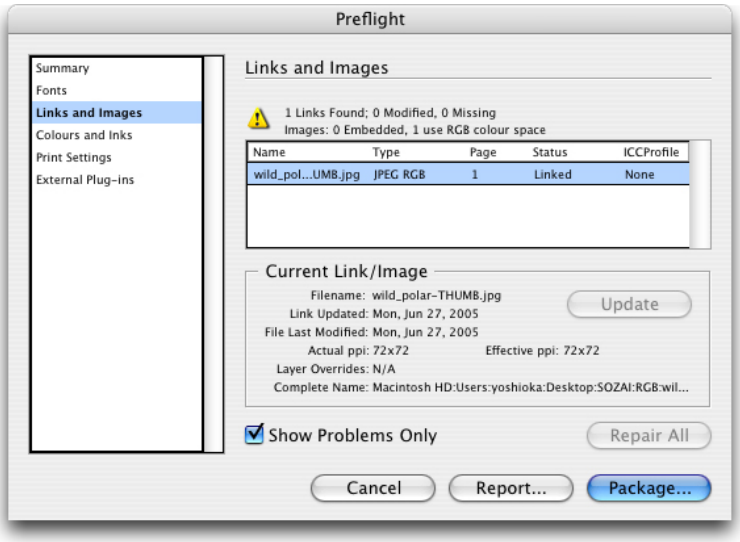
This section describes InDesignCS2/CS3 preflight.
For CS4 or later, to check similar thingss using live preflight function.

1. Before saving data in the PDF format, a preflight is performed in InDesign to check for any RGB image included in the data.
   Select File /s Preflight... .

RGBs that cannot be checked by preflight
As InDesign cannot detect RGB images that are embedded in a laid out EPS file, Adobe Illustrator file, and Macromedia FreeHand file, check the color data of the layout images using the original application.

2. The preflight result is displayed in a dialog box.
   You can check whether an RGB image is included by selecting “Summary” or “Links and Images”. When you check the “Show Problems Only” checkbox, only the RGB images can be listed.

In the RGB workflow, check that the RGB images are laid out appropriately in the required positions.



3. When PDF/X-4 output, make prior arrangement needed by referring “Processing procedure of the RGB workflow on EQUIOS” (P42).

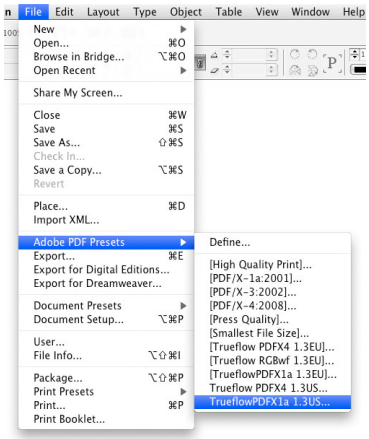
If an RGB image is included for PDF/X-1a output, convert it into a CMYK image before using the data.
Otherwise, the RGB image portion may be output using unexpected colors.

PDF Export

For procedure to install presets, refer to "Creating PDF/X-1a Files in Acrobat Distiller" (P66)

PDF/X-1a output
Select "EQUIOS Color Pro 1.0EU..." or "EQUIOS Color Pro 1.0US..." in the preset for EQUIOS.
PDF/X-4 output (for CS3-CS5)
Select "EQUIOS X4 2008_1_EU..." or "EQUIOS X4 2008_1_US..." in the preset for EQUIOS.

1. Select "File / Adobe PDF Presets / EQUIOS X4 2010_1_US... or EQUIOS X4 2010_1_EU...

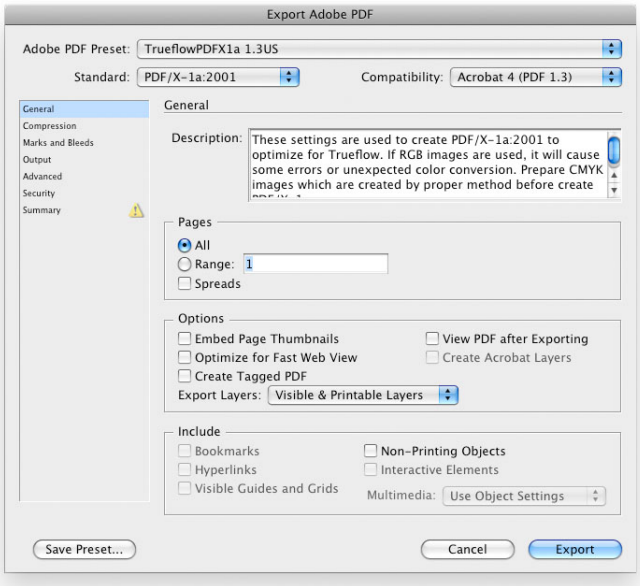


2. Specify the file name and save location in the Export dialog box, which is displayed, and click the "Save" button. The "Export PDF" dialog box is displayed.
Make settings for each panel according to the descriptions below.

I. General

Standard	PDF/X-4:2010
Compatibility	Acrobat 7 (PDF 1.6)
Pages	Make the setting as necessary.

PDF/X-1a Output
[Standard] : PDF/X-1a:2001
[Compatibility] : Acrobat 4 (PDF1.3)
PDF/X-4 Output (for CS3-CS5)
[Standard] : PDF/X-4:2008
[Compatibility] : Acrobat 5 (PDF1.4)



II. Compression

Compression setting
The lossless compression setting is used because the emphasis is on quality in the Presets files.
When performing JPEG compression, make sure that there is no problem with quality before changing the setting.

Compression	Make the setting as necessary.

III. Marks and Bleeds

Marks	Make the setting as necessary.
Bleed and Slug	Make the setting as necessary.
Bleed	Same value as EQUIOS

IV. Output

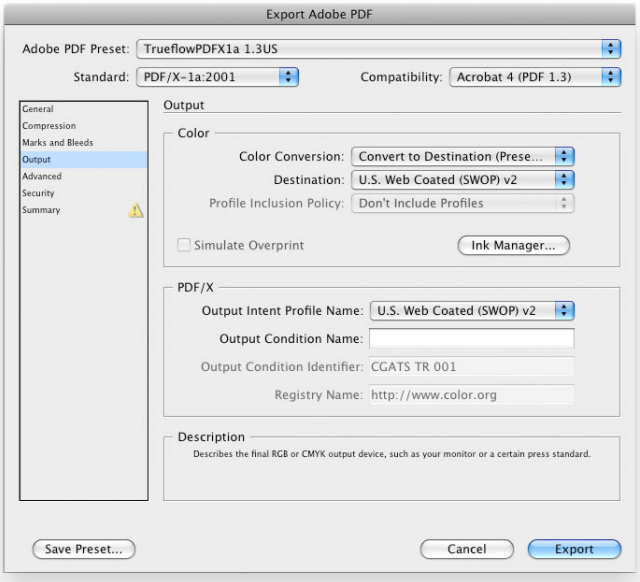
We recommend the setting shown on the right, but change the setting as is necessary.

Output
A change of setting will affect the image quality output.
If the setting is changed, it is necessary to ensure that there is no problem with the output image quality beforehand.

Color	
Color Conversion	[Color Conversion] : No Color Conversion
Destination	N/A
PDF/X	
Output Intent Profile Name	[for US] U.S. Web Coated (SWOP) v2 (Custom) [for EU] Euroscale Coated v2 (Custom)

[Color Conversion] :
If you select "None", it will not be PDF/X-1a.

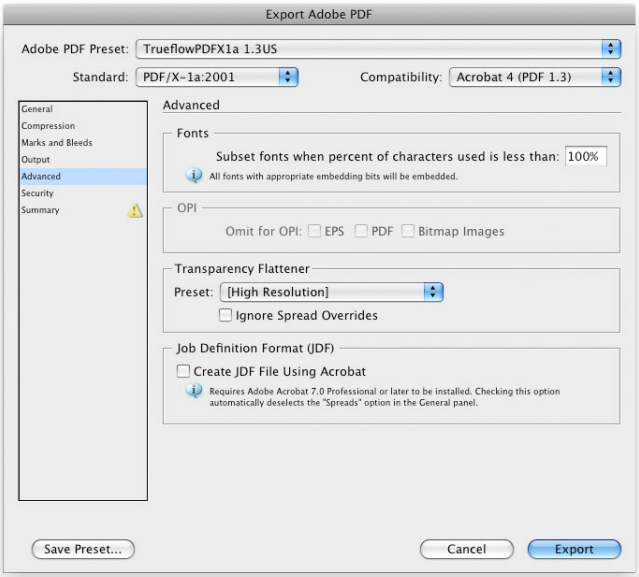
PDF/X-1a Output
[Color Conversion]:Convert to Destination (Preserve Numbers)
[Destination] :
[for US] U.S. Web Coated (SWOP) v2 (Custom)
[for EU] Euroscale Coated v2 (Custom)
PDF/X-4 Output (for CS3-CS5)
[Color] : No Color Conversion
[Profile Inclusion Policy] : Include All RGB and Tagged Source CMYK Profile
[Output Intent Profile Name] :
[for US] U.S. Web Coated (SWOP) v2 (Custom)
[for EU] Euroscale Coated v2 (Custom)



V. Advanced

Transparency Flattener	
Preset	[High Resolution]

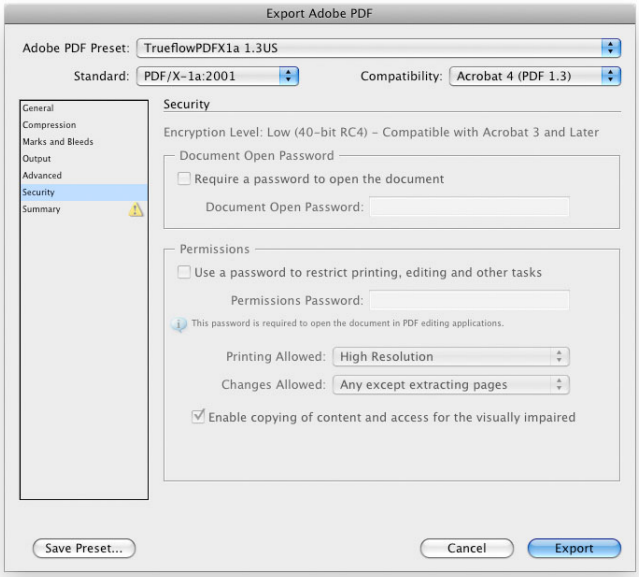
[Transparency Flattener]:
Output with "High Resolution" selected normally.
If an error occurs when RIP'ing very complex data, including data with transparency processing, review "Verification and confirmation of PDF" (P67) and then change the settings using "Edit" - "Transparency Flattener Presets".



VI. Security

(Do not make any settings.)

Security settings
If security settings are made, there will be times when EQUIOS ends in an error, resulting in improper output. Do not make any security settings.



3. Click the "Export" button to save the file.

Creating PDF/X Files in Illustrator

In Illustrator, you can directly create PDFs that can pass the preflight for PDF/X using the procedure below.

If RGB images are included, see "Color management and RGB workflow" (P39), and take the steps that will give you the quality that you need. Do not output the RGB image without a countermeasure applied.

The following presets are available in EQUIOS for PDF/X output. See "Recommendations for direct output of PDF and native import" (P5)for more information.

[for EU]

- EQUIOS X4 2010_1_EU.joboptions (for PDF/X-4 CS5.5 or later)
- EQUIOS X4 2008_1_EU.joboptions (for PDF/X-4 CS3 - CS5)
- EQUIOS X1a 2001_1_EU.joboptions (for PDF/X-1a CS3 or later)

[for US]

- EQUIOS X4 2010_1_US.joboptions (for PDF/X-4 CS5.5 or later)
- EQUIOS X4 2008_1_US.joboptions (for PDF/X-4 CS3 - CS5)
- EQUIOS X1a 2001_1_US.joboptions (for PDF/X-1a CS3 or later)

This section describes how to create PDF/X-4, but only the differences from what appears in "PDF/X-1 output", which assumes you are using PDF/X-1a for output, are written in the sidebar.(We recommend the PDF/X-4 output.)

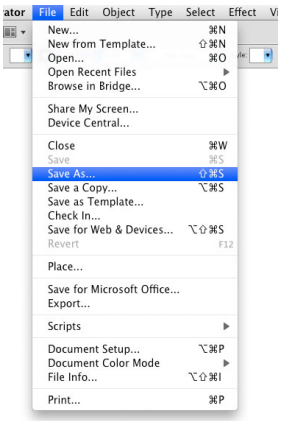
PDF Export

For procedure to install presets, refer to "PDF export presets" (P78).

When you do this, select either the US or the EU preset (US screens are used in this explanation).

PDF/X-1a output
PDF/X-1a output
Select "EQUIOS Color Pro 1.0EU..." or "EQUIOS Color Pro 1.0US..." in the Adobe PDF presets.
PDF/X-4 output (for CS3-CS5)
Select "EQUIOS X4 2008_1_EU..." or "EQUIOS X4 2008_1_US..." in the Adobe PDF presets.

1. Select "File / Save As...".



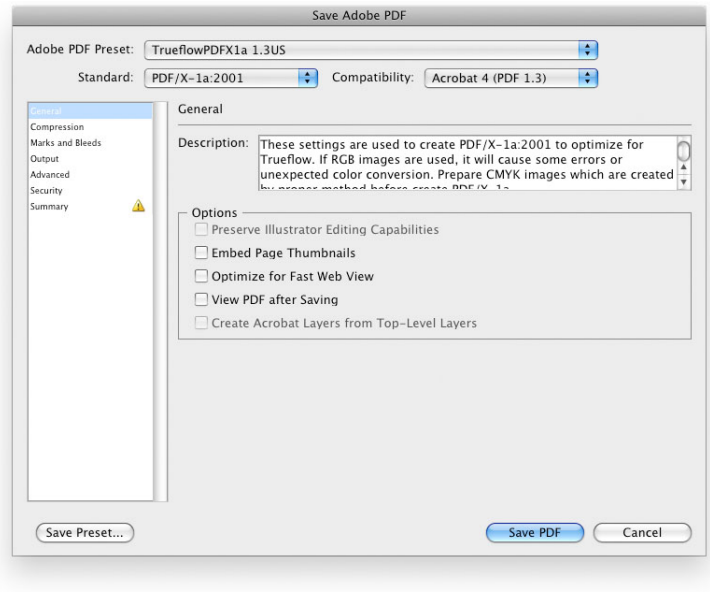
2. In the "Save As" dialog box, specify the name and save location of the file, select "Adobe PDF (pdf)" in "Format" and click "Save". The "Save Adobe PDF" dialog box is displayed.
3. Select "EQUIOS X4 2010_1_US..." or "EQUIOS X4 2010_1_EU..." in the preset for EQUIOS.

I. General

Standard	PDF/X-4:2008[*1)]
Compatibility	Acrobat 5 (PDF1.4)

[*1)] In case of CS3, [Standard] is displayed as "PDF/X-4:2007" instead of "PDF/X-4:2008".

PDF/X-1a Output
[Standard] : PDF/X-1a:2001
[Compatibility] : Acrobat 4 (PDF 1.3)



II. Compression

Compression setting
The lossless compression setting is used because the emphasis is on quality in the Presets files.
When performing JPEG compression, make sure that there is no problem with quality before changing the setting.

Compression	Make the setting as necessary.

III. Marks and Bleeds

Marks	Make the setting as necessary.
Bleeds	Same value as EQUIOS

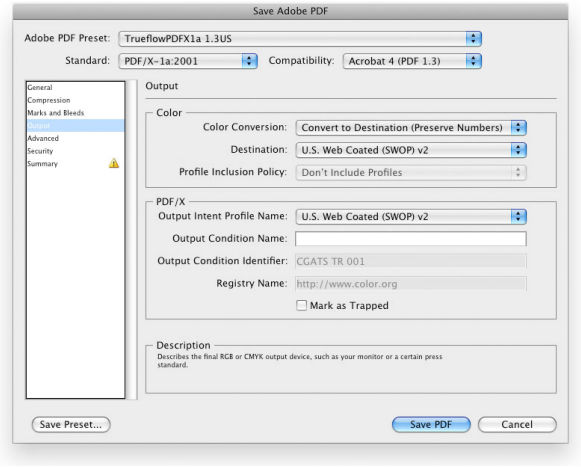
[Bleeds]:
The value to be set here must be matched up with the set value in EQUI.

IV. Output

[PDF/X]:
We recommend "U.S. Web Coated (SWOP) v2" for the US version and "Euroscale Coated v2" for the European version, but you can choose whichever setting you want. Change as necessary.

PDF/X-1a Output
[Color Conversion] : Convert to Destination (Preserve Numbers)
[Destination] :
[for US] U.S. Web Coated (SWOP) v2 (Custom)
[for EU] Euroscale Coated v2 (Custom)

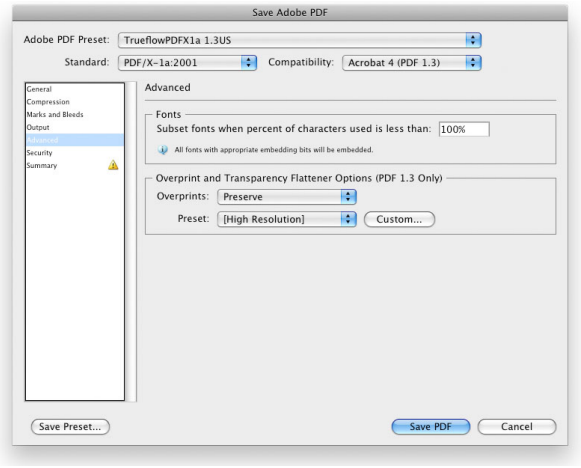
Color	
Color Conversion	No Color Conversion
Destination	N/A
PDF/X	
Output Intent Profile Name	[for US] U.S. Web Coated (SWOP) v2 (Custom) [for EU] Euroscale Coated v2 (Custom)



V. Advanced

PDF/X-1a Output
[Transparency Flattener]:
Output with "High Resolution" selected normally.
If errors occur while RIP'ing extremely complex data, including processing transparency effects, refer to "Verification and confirmation of PDF" (P67) , and then change the setting using Edit > Transparency Flattener Presets, or change the setting by clicking the "Custom..." button.

Overprint and Transparency Flattener Options (PDF 1.3 Only)	
Overprints	Grayed out because flattening is not required
Preset	Grayed out because flattening is not required



VI. Security

(Do not make any settings.)

If security settings are made, there will be times when EQUIOS ends in an error, resulting in improper output. Do not make any security settings.

4. Click the "Export" button to save the file.

Creating PDF/X-1a Files in Acrobat Distiller

When you use an application that cannot create a PDF/X-1a file directly, create a PDF/X-1a file from the PostScript file that was output from the application using Acrobat Distiller 9.
In these applications, a PPD file called “Adobe PDF” is used as the PPD file when outputting a PostScript file rather than an EQUIOS PPD file.
It is necessary to export PostScript in which transparency cannot be encoded, so at that point, you must make the appropriate transparency flattening settings, and RGB images also cannot be included.

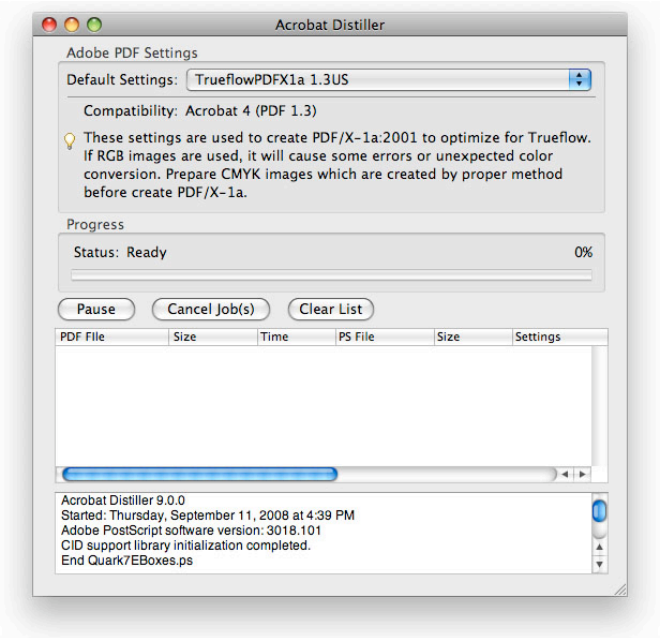
Creating in Acrobat Distiller

For procedure to install presets, refer to “PDF export presets” (P78).

When you do this, select either the US or the EU preset (US screens are used in this explanation).

1. Open Acrobat Distiller, select “EQUIOS X1a 2001_1” and drag the PostScript file into the dialog box to create a PDF file.

Adobe PDF Settings	
Default Settings	[for EU] EQUIOS X1a 2001_1_EU [for US] EQUIOS X1a 2001_1_US



Verification and confirmation of PDF

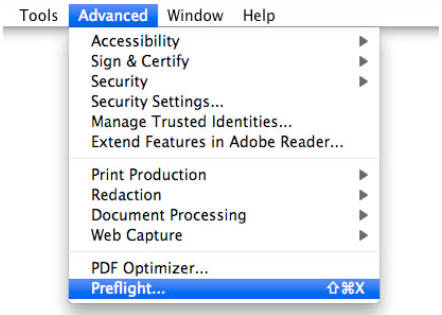
Verifying PDF

After PDF creation has been completed, perform verification.
This section describes the steps for verifying using Acrobat Pro.

I. Using Acrobat Pro

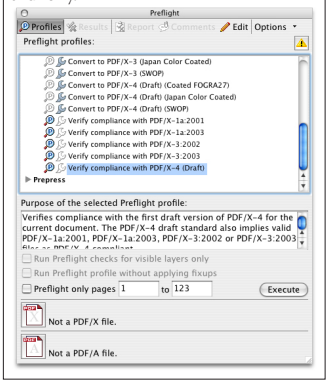
If you use Adobe Creative Suite 3, you must update Acrobat 8 to 8.1.

1. Open the file you wish to verify using Acrobat Pro, and select “Document / Preflight...”.

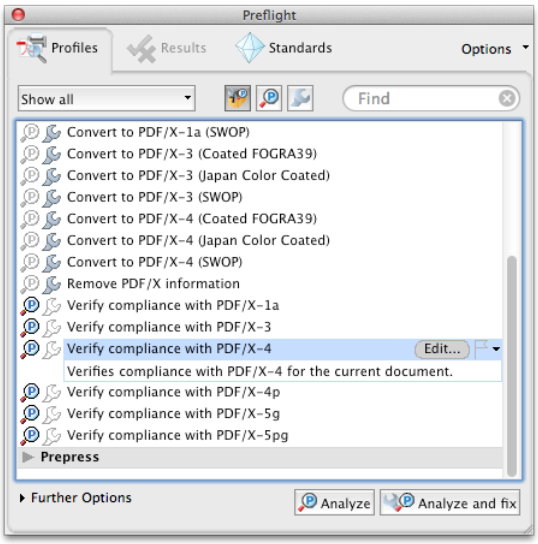


II. Preflight

PDF/X-4 Output
Use the “Verify compliance with PDF/X-4” and verify.

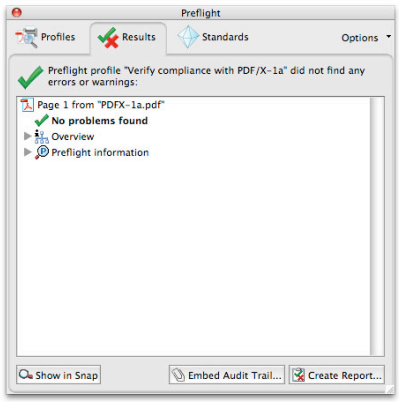


2. Select the appropriate profile from the Preflight list, and click “Execute” to run the Preflight check. (PDF/X-4 is used in this explanation).

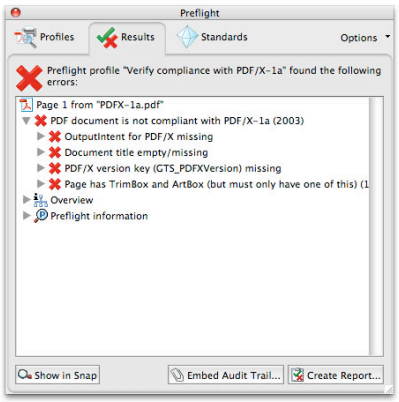


3. After the completion, the preflight results will be displayed.

[OK (acceptable)]



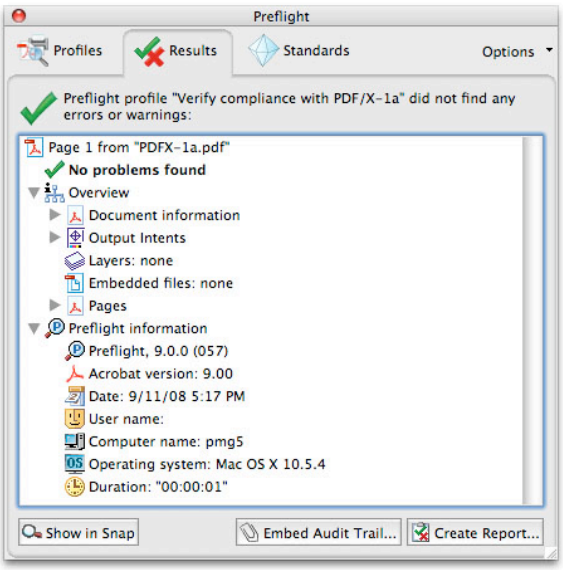
[NG (unacceptable)]



III. Preflight: results in detail

You can view more information on the verification results by selecting an item from the "Overview" and "Preflight information" pulldown menus.

4. Information such as "Overview" and "Preflight information" is displayed when you check the "Show detailed information about document" checkbox.



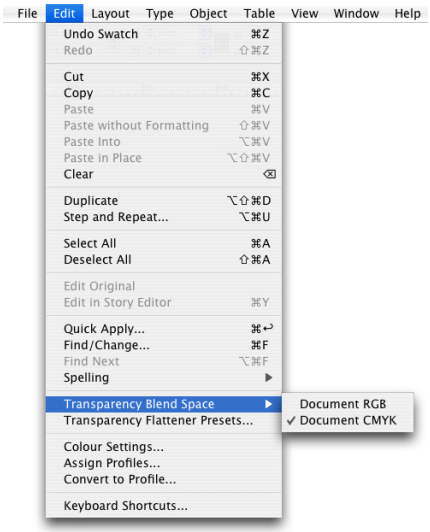
This completes the PDF verification.

Points to Note

PDF/X-4 workflow

Transparent Blend Space

In a PDF/X-4 workflow, the transparency effects are reflected as is in the PDF, and the processing of merging transparent objects is performed by the RIP, so it is necessary to pay attention to the device color space when creating the data.
It is possible to blend transparency effects using RGB-based or CMYK-based rendering, and it is necessary to use CMYK-based rendering when processing transparency effects for printing. The results will not be correct if you use RGB-based rendering. These settings are made in the application. In InDesign CS2 or CS3, select “Edit” > “Transparency Blend Space” > “Document CMYK”. Transparency blending in EQUIOS makes it possible to use CMYK-based rendering so PDF created this way can be printed appropriately.



Merging transparent objects

In a PDF/X-4 workflow, transparency effects are not flattened and combined in the DTP application, but instead are processed in the RIP. These are processed internally in EQUIOS with quality as the priority, so if you have extremely complex data that uses a lot of transparency effects, processing times become long and the data resulting from flattening and combining may become too large and impossible to process. The processing load becomes extremely heavy in the following types of cases.

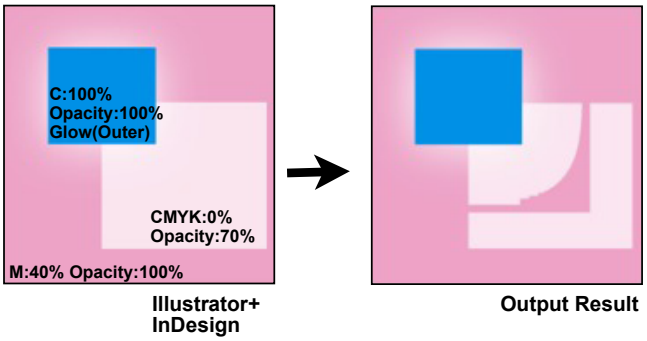
- Nature images or drop shadows on gradients
- Transparency-related effects such as drop shadows on objects with complex paths
- Nature images with transparency effects on blends that use multiple objects in objects such as 3D text

Placing data with effects into InDesign

FIXED

With following versions of Trueflow, this problem has been fixed.
- Trueflow Ver5.01 TF175
- Trueflow Ver6.01 TF135
- Trueflow Ver7.10 TF110
- Trueflow Ver7.20 or later
- EQUIOS Ver1.0 or later

If you export data created in Illustrator or Photoshop with special effects such as outer glow as native data or PDF exported from an application, place it in InDesign, and then export it as PDF/X-4, there are times when the output from Trueflow Advanced PDF is not correct.
This problem cannot be confirmed in Acrobat and occurs in output from previous versions of Trueflow.



Font preflight problems

If you input PDF that uses functions from PDF1.4 and higher or separated PDF, the font results in Preflight may be NG if one of the following conditions is present. Corrupted characters do not occur in the actual output.
- Embedded Type 3 fonts
- Fonts that are not actually used in an illustration but for which there is information in the PDF

PDF with transparency effects outputs completely blank

If you input PDF that includes transparency effects and the following conditions are present, illustrations may shift position on the page or the output may be completely blank.
- When the “Prepress Margins” setting in the “Other” tab is Off
- When a negative value is set for the MediaBox or other origin coordinates in a PDF file

As described in “Bleed” (P33) this problem can be avoided by accurately designing bleeds and creating data with an awareness of the page origin.

PDF/X-1a workkflow

Text missing on vertical text with transparency effects

FIXED

This bug has been fixed in InDesign CS5 and Illustrator CS5

In InDesign CS2 - CS4 and Illustrator CS2 - CS4, if you apply transparency and overprints to vertical text and output it in PDF/X-1 format, a problem causing text to appear to be missing when displayed in Acrobat 9 may occur. This problem occurs in Acrobat 9 only, as it did not occur in Acrobat 8 or earlier and has been fixed in Acrobat X.

This problem does not occur in Trueflow, but it is necessary to be careful because if you place that data in InDesign CS4 or Illustrator CS4, the data ends up with unavoidable bugs.
This problem also does not occur in InDesign CS5 and Illustrator CS5 or later.
concerned about a complex document, it is necessary to check it very carefully by eye.

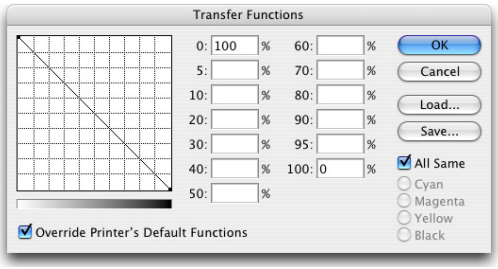
InDesign

Multiscreening

There is a problem where by PostScript data output from InDesign does not include halftone screening information that is included in imported PhotoshopEPS. Therefore, multiscreening cannot be used on InDesign. Even in this case, it is possible to specify multiscreening using TrapEditor MS after inputting data into Trueflow.

Application of Transfer Function

In order to apply the Transfer Function specified in Photoshop on InDesign CS or later, the “Override Printer's Default Functions” checkbox must be checked in the Transfer Functions setup window of Photoshop.
At the same time, the “Include Transfer Function” checkbox in “EPS Options” must be checked when saving as an EPS. (In InDesign 2.0.2 or earlier, there was a bug whereby the Transfer Function was not applied properly.)



Operation using DCS format EPS images

When DCS format images were used in previous versions of InDesign, it was necessary to perform the OPI processing in Trueflow. In InDesign CS, however, DCS images can be converted to composite and embedded in PostScript data, so the OPI processing in Trueflow is not required. Since this function is designed for images created in Photoshop, the OPI processing must be performed for DCS format images created in other applications as before.

Illustrator EPS data containing spot colors

If data from Illustrator 10 or earlier contains EPS data that includes spot colors and that EPS data is imported into InDesign and output as PostScript, PostScript with coding inconsistencies is generated and an error occurs.
If you use EPS data that includes spot colors, use Illustrator CS or later.

Specifying RGB color of "0, 0, 0"

X-1a

If an RGB "0, 0, 0" color is specified for objects such as text, keylines and fills in InDesign, the K separation does not become 100% during output, and the data is converted into the four CMYK process colors. (InDesign specification)
Do not specify colors as RGB colors in InDesign, and specify them as CMYK colors instead.
(* It is not applicable for the RGB workflow.)

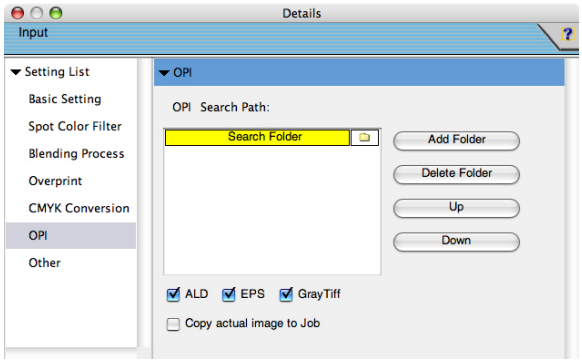
Transparency and blurring effects

When processing grayscale images with transparency and blurring effects applied in InDesign, unwanted lines may appear on the images depending on the resolution.

OPI settings for GrayTIFF data

If you process PS with values other than 100% specified for the shading (density) on GrayTIFFs colorized in InDesign, turn on the following OPI options in the Trueflow import job ticket.

- ALD
- EPS
- GrayTiff



If you set up OPI processing such as the above for data that includes GrayTIFFs colorized with spot colors in InDesign and the high res images are not present, the colors in the low res image areas are output lighter. (This problem does not occur if you colorize with process colors).

Layered output function

When using the function to output the image with other data overlapped in part in Trueflow (layered output function), if PostScript is output from InDesign using the color of "In-RIP Separations", the image that positioned underneath will be hidden by the overlapped data. This occurs because a white object that is the same size as the image will be output. When using the layered output function for the data created in InDesign, output the data in a PDF/X-1A format.

Positioning of PDFs in InDesign

With all versions of InDesign, when a PDF is positioned as an object in a document, it has been confirmed that problems such as the omission of images occur.[*1)] Due to this, positioning of PDFs in InDesign documents should not be attempted. However, this problem does not occur when, for PDF/X-4 applications, an IllustratorCS2 native file (structurally PDF format) is positioned in an InDesignCS2 document or, similarly, when a transfer is made from IllustratorCS3 - CS5 to InDesignCS3 - CS5.

For further information, refer to "Illustrator native workflows" (P5) .

[*1)] This occurs with high frequency when PDFs output directly from QuarkXPress 6.x, which is not supported by Trueflow, are positioned in InDesign.

"Effects" in InDesign CS3 - CS5

If you use the following from "Effects", which are supported in InDesign CS3 or later, output problems may occur if the target objects are rotated. This also occurs in InDesign CS4 and CS5.

- Bevel and Emboss
- Inner Shadow
- Inner Glow
- Satin

To avoid these problems, you can create the same design in Illustrator and place it in InDesign for output or output PDF/X-1a from that InDesign document to convert the effects to images for output.

With following versions of Trueflow, this problem has been fixed.
- Trueflow Ver4.01 TF185
- Trueflow Ver5.01 TF175
- Trueflow Ver6.01 TF135
- Trueflow Ver7.10 TF110
- Trueflow Ver7.20 or later
- EQUIOS Ver1.0 or later

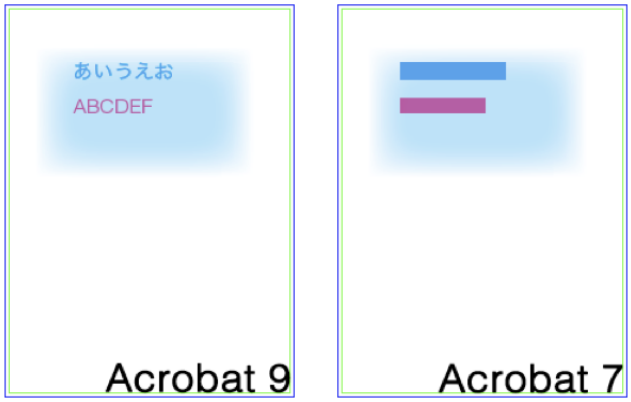
Problem with composite fonts in InDesign CS2 - CS4

FIXED

This InDesign bug has been fixed with InDesign CS4 6.0.4 or later.

With following versions of Trueflow, this problem has been fixed.
- Trueflow Ver4.01 TF180
- Trueflow Ver5.01 TF168
- Trueflow Ver6.01 TF125
- Trueflow Ver7.00 TF017
- Trueflow Ver7.10 or later
- EQUIOS Ver1.0 or later

If you directly output PDF/X-1a from an InDesign CS2 - CS4 document that uses composite fonts and display it in Acrobat 7 or Acrobat 9 (or Acrobat 8), there are times when differences appear in the display.



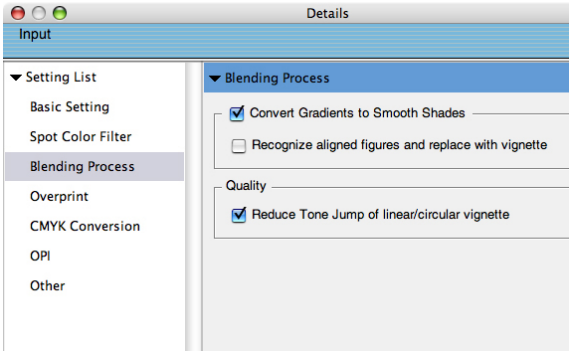
There are times when the same problem occurs in conventional Trueflow RIP'ing.

When you look at the problem, it appears as if it was corrected in Acrobat 8 or later, but the actual cause of this problem is in the encoding of the PDF output from InDesign. We know that Acrobat 7 and Trueflow output results conform to the PDF standard (differ from the display in InDesign). For printing, if you cannot achieve the results you see in Acrobat 9, which is to say InDesign, problems will occur.

Illustrator

"Replace vignettes" in Trueflow

If you process data that includes gradients using the import processing with the "Convert Gradients to Smooth Shades" option set to OFF, there are times when the gradients are left out or the quality is lowered. Normally, set the "Convert Gradients to Smooth Shades" option to ON in the import processing.
However, as an exception, if you process data that contains objects with special effects over vignettes, density differences may occur in the vignettes around the objects. If this happens, you can turn the "Convert Gradients to Smooth Shades" option off in Input processing and avoid this problem by not replacing the vignettes.



Objects converted to images

If data contains Illustrator effects such as transparency, blurring or drop shadows, the target objects are converted to images and saved. As a result, there are times when the output results from the areas that were converted to images are blurred or have banding.

Conversion to proxy colors from spot colors

When spot colors with the same name but different proxy color values are used and impositioned on an identical page / signature, even if these spot colors are imported with the "Load spot colors" option set to ON in the import processing template, all the spot colors with the same name will have an identical proxy color value.
If you want to register them as temporary spot colors for data creation and then later convert them to separation process colors for output, set OFF for the "Load spot colors" option in the import processing template to convert spot colors to process colors. If you want to use QuarkXPress Versions 4.1 and 5.0, it is possible to convert spot colors to process colors from the proxy color values set for each object by using the TP-X spot color adjustment function.

PDF

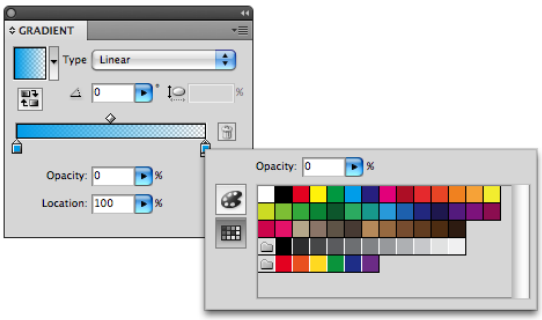
- PDF1.4 format data directly output from Illustrator CS2 cannot be output properly. Use data saved as PDF/X-1a or EPS, not the PDF 1.4 format data that is output directly from Illustrator CS2.
- If both transparency effects and the gradient mesh function are used when creating PDFs in Illustrator, the gradient mesh objects may be left out.
- When outputting PDF from Illustrator CS / CS2, embed the images rather than linking them. If images are linked, unwanted lines may appear on the images.
  This problem was fixed in Illustrator CS3.

OutlinePS / EPS in Trueflow

There are some points to note when creating OutlinePSs and EPSs in Trueflow from jobs that include Illustrator data.
Refer to "Notes on Using Trueflow" for more information.

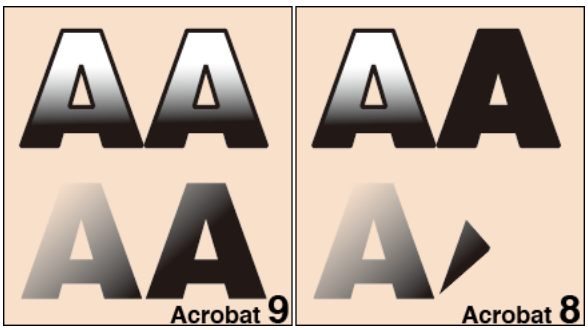
Transparency gradation in the IllustratorCS4 or later

Adobe Creative Suite 2 and Acrobat 7 or before are not functional for transparency gradation data which is newly supported in the IllustratorCS4. To output the data in the InDesign, use the InDesignCS4. (see "Illustrator native workflows" (P5))



Text and transparent gradients

If you use Illustrator CS4 or later, use transparent gradients on text and export the data in PDF/X-4 format, it is not displayed correctly in Acrobat 8 and earlier.
If you convert to PDF1.3 in Trueflow, the same problem occurs.



Text that had been made thicker appeared blurred

Text that had been made thicker appeared blurred
When text was designed to be made thicker by specifying the line width, there are times when the text appears blurred as a result of RIP'ing. This problem occurs when low resolution is used and the specified line width is not suitable for the resolution.

Texts are adjusted to match the width for image fills (fill) based on the HINT information.

Text outlines are adjusted to match the stroke width (stroke) by the stroke adjustment (SA) function. As the fill and stroke are adjusted (finely moved) separately, a gap appears between the fill and stroke when the resolution is low.
This problem can be avoided by using bold font or widening the line width, not by specifying the line width for the text, when you make text thicker. However, it must be noted that there are times when the text is difficult to read when you widen the line width.

Photoshop

When DCS is created in Photoshop

As above reason we recommend Photoshop CS or later for DCS image.
If a file is saved in DCS or later format with "No Composite" in Photoshop 7 or Photoshop CS or later , the OPI processing is not performed correctly in Trueflow. This bug has been fixed so that saving the file with "Color Composite" ensures correct processing.
In addition, if a DCS image is created with JPEG encoding in Photoshop 7, the data will be invalid and an error will occur in Trueflow. This will not occur in Photoshop CS or later.
With a DCS2 image created using Photoshop 6 or earlier, lack of any CMYK separations will cause an invalid data error.

History Log

When an EPS file with a history log embedded is saved using the History Log function of Photoshop CS, if the history log becomes large by many editing operations, the log exceeding the size limit of PostScript text will be recorded in EPS, which causes an error. Do not use this function.

Installing and setting up

This chapter describes the settings required before using data files created in DTP applications in EQUIOS and important information on output settings that are recommended for EQUIOS.

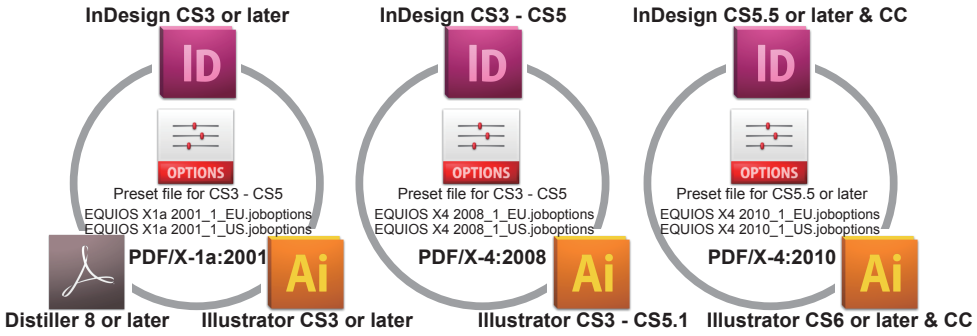
PDF export presets

EQUIOS provides preset files that make it possible to easily make the required settings for PDF/X export correctly.

- Preset file support table

Output format	PDF/X-1a	PDF/X-4
Adobe CS3 - CS5	EQUIOS X1a 2001_1_EU.joboptions EQUIOS X1a 2001_1_US.joboptions	EQUIOS X4 2008_1_EU.joboptions EQUIOS X4 2008_1_US.joboptions
Adobe CS5.5 or later Adobe CC	EQUIOS X1a 2001_1_EU.joboptions EQUIOS X1a 2001_1_US.joboptions	EQUIOS X4 2010_1_EU.joboptions[1)] EQUIOS X4 2010_1_US.joboptions[1)]
Distiller 8 or later	EQUIOS X1a 2001_1_EU.joboptions EQUIOS X1a 2001_1_US.joboptions	n/a

[*1)] See "Differences from standard settings of Adobe" (P78)



Although this preset file is slightly different in some details from the standard preset file provided by Adobe, it can be used to create PDF files that comply with each PDF/X standard.
See "Presets for Adobe CS, Adobe CC and Acrobat" (P79) for more information about the saved location for the preset files.

Differences from standard settings of Adobe

There are several differences between the Adobe standard settings in Adobe Acrobat and EQUIOS's recommended settings.

- Distiller has been set so that when an RGB image is imported, it is not automatically converted into a CMYK image, instead the program ends with an error.
- To guarantee image quality, the ZIP file format is used to compress images.
- The bleed settings are mostly enabled in Adobe Creative Suite.
- The setting has been optimized so that the output quality and transparency effect have improved greatly when data is processed in EQUIOS.

Changes in InDesign CS5.5 and Adobe CS6

There are some changes and relevant points to note for InDesign CS5.5 and all of Adobe CS6.
The PDF/X-4 setting of “Standard” for PDF/X-4 output has been changed from “PDF/X-4:2008” (based on PDF 1.4) to “PDF/X-4:2010” (based on PDF 1.6) in InDesign CS5.5 and Adobe CS6. As a result of this change, the previously used PDF export preset file “EQUIOS X4 2008_1_EU.joboptions” and “EQUIOS X4 2008_1_US.joboptions” can no longer be used.
Instead, “EQUIOS X4 2010_1_EU.joboptions” and"EQUIOS X4 2010_1_US.joboptions", which is compatible with CS5.5 and CS6, has been created for the EQUIOS workflows. The new preset file cannot be used with CS5 or earlier.[*1)]
The change to PDF/X-4:2010 also provides advantages. Since it is now based on PDF 1.6, “Versioning workflow” (P5) can be performed with standard settings.

[*1)] In addition, as an error occurs when the PDF/X-4:2010 data output from InDesign CS5.5 is verified using “Verify compliance with PDF/X-4”, which is a preflight profile for Acrobat 9, preflight for the data must be run with Acrobat X.

Change to preset settings

It is possible to change and re-save settings in PDF export preset files for each application in Adobe Creative Suite.[*1)]
However, you may obtain unexpected results if you make the settings in an application and then use a preset that was saved in a different version of that application (CS3 - CS6, Distiller 8 or later). Be sure to use a preset file that is specifically for the version in which the settings were saved. Only the default settings file can be shared by all versions.
Even when an equivalent setting change is required in all applications (e.g., compressing images in the JPEG format), an individual preset file must be created for each application.

[*1)] Since the Adobe PDF preset file is locked, if you modify the setting and then click the OK button, the message "An error occurred writing the Adobe PDF Setting File." will be displayed. Therefore, after modifying the setting, click the Save As button and save the setting under a different name.

Presets for Adobe CS, Adobe CC and Acrobat

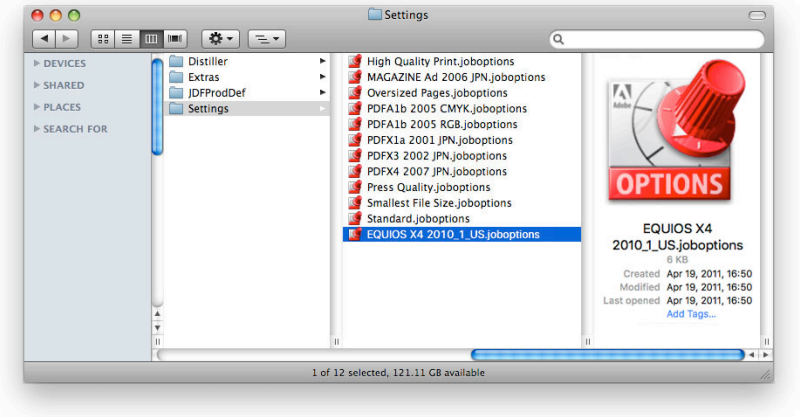
Adobe PDF presets

I. Cautions

- The storage location for the PDF preset files has changed, and preset files saved to user folders by individual users cannot be shared among all users. It is necessary to set these separately.
- Set preset files can be shared between Acrobat and all of the Creative Suite applications.

II. Adobe PDF settings

1. Store preset files in the following folder
   (Mac)
   /Users/[User Name]/Library/Application Support/Adobe/Adobe PDF/Settings/
   (Win)
   \Documents and Settings\[User Name]\Application Data\Adobe\Adobe PDF\Settings\



2. Once this file has been placed, all of the applications can use this job.

This finishes setting up presets.

Color Presets for Adobe CS and Adobe CC

The description below is given using Preset for US. The setting procedure is the same if you use Preset for EU.

Color setting file

When the "TEQUIOS Color Pro 1.0EU", "EQUIOS Color Pro 1.0US" file is used, a warning regarding inconsistency of the color profile set for the document will be displayed whenever necessary. However, when the "EQUIOS Color Std 1.0EU", "EQUIOS Color Std 1.0US" file is used, no warning related to profiles will be displayed.

EQUIOS provides the following two color setting files (.csf) as recommended color settings.

(for EU)

- EQUIOS Color Pro 1.0EU.csf
- EQUIOS Color Std 1.0EU.csf

(for US)

- EQUIOS Color Pro 1.0US.csf
- EQUIOS Color Std 1.0US.csf

These color setting files can be shared by all applications.

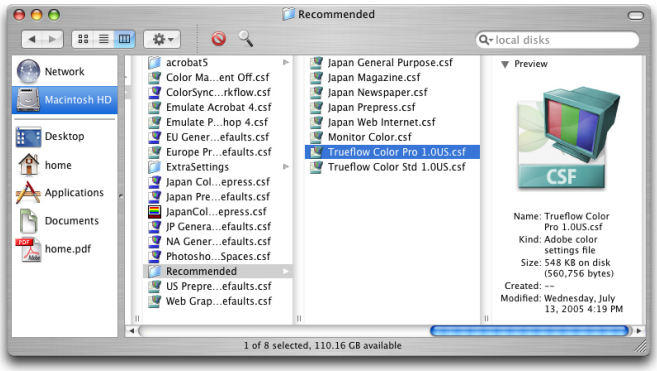
Set "sRGB IEC61966-2.1" for an RGB image workspace, and for a CMYK image workspace, choose "U.S. Web Coated (SWOP) v2" for the US version and "Euroscale Coated v2" for the European version.

In these settings, the profile linked to a CMYK image is ignored and the color values are retained.

As for inconsistency of the color profiles for which you must pay attention during an operation, a warning indication will be displayed whenever necessary.

I. Preset color setting

1. Store the two preset color files (Pro version and Std version) in the folder specified below.
   (Mac)
   /Library/Application Support/Adobe/Color/Settings/Recommended/
   (Win)
   \Program Files\Common files\Adobe\Color\Setting\Recommended\



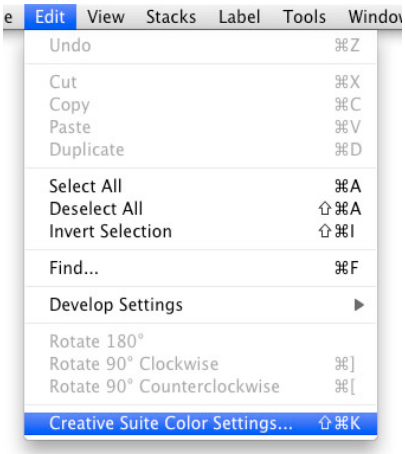
This completes the setting for preset color.

II. Color setting synchronization

If you use multiple applications from Adobe Creative Suite, use Bridge to set the colors before beginning work.

Once the colors are set, the settings are automatically synchronized, so the same colors are rendered in all of the Adobe Creative Suite applications.

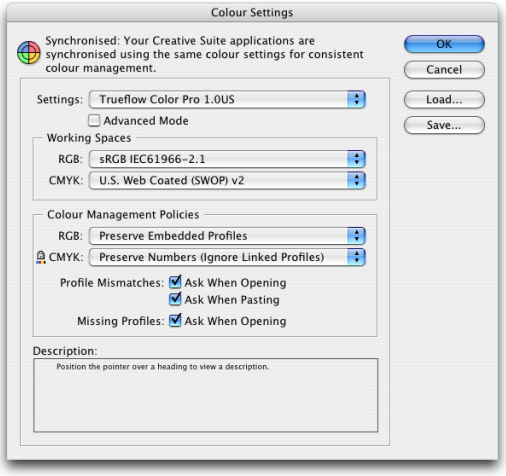
1. Start up Bridge.
2. Select “Edit” - “Creative Suite Color Settings...” from the menu.



When “Creative Suite Color Settings...” is not displayed in the menu of Bridge, perform the same color settings in each application.
Screen shots for the US version are used here.

3. The “Suite Color Settings” dialog box is displayed.
   Select the color setting, either “EQUIOS Color Pro” or “EQUIOS Color Std”, from the list, and then click “Apply” to complete the color setting synchronization.

4. This color setting synchronization can be checked from Bridge and all other applications of Adobe Creative Suite.
   [When using InDesign CS3]



Appendix :

Detail table of contents

Document No : 100288803V00

May 21, 2004	The 1st Edition	Ver2.20	Descriptions of how to create PS in InDesign CS and how to create EPS in Illustrator CS
June 29, 2004	The 4th Edition	Ver2.21 / 3.00	Support for Trueflow Version 3.00
Nov. 19, 2004	The 5th Edition	Ver2.21 / 3.02	Addition of a PDF/X-1a workflow
Mar. 3, 2005	The 6th Edition	Ver2.21 / 3.02	Addition of overprints and bleeds to the PDF/X-1a workflow, Updates for QuarkXPress 6.5 and Acrobat 7
July 22, 2005	The 7th Edition	Ver2.21 / 3.03	Changes to the document configuration, Support for Adobe Creative Suite 2, Color management, CS2 presets, addition of spot color specification
Oct. 25, 2005	The 8th Edition	Ver2.21 / 3.03 / 3.11	Addition of an RGB workflow, Windows XP initial settings
Apr. 24, 2006	The 9th Edition	Ver2.21 / 3.03 / 3.12	Revisions to the RGB workflow, overprints, bleeds
Sept. 7, 2006	The 10th Edition	Ver2.21 / 3.03 / 3.12 / 4.00	Support for QuarkXPress 7.0
Nov. 28, 2006	The 11th Edition	Ver2.21 / 3.03 / 3.12 / 4.01	Support for Acrobat 8, Revisions to the RGB workflow and white overprints, Addition of OPM
July. 25, 2007	The 12th Edition	Ver3.03 / 3.12 / 4.01 / 5.00	Support for Trueflow SE and Adobe Creative Suite 3. Revisions to the OPM
Sept. 22, 2008	The 12th Revised Edition	Ver3.12 / 4.01 / 5.01 / 6.00	Support for QuarkXPress 8 , Acrobat 9 ,Versioning workflow
Jan. 30, 2009	The 13th Edition	Ver4.01 / 5.01 / 6.00	Support for Adobe Creative Suite 4
Jun. 30, 2010	The 14th Edition	Ver5.01 / 6.01 / 7.10 / later	Support for Adobe Creative Suite 5. Update PDF/X-4 & Adobe PDF Print engine detail information, Improve style of writing
Jun. 30, 2010	The 14th Edition	Ver5.01 / 6.01 / 7.10 / later	Support for Adobe Creative Suite 5. Update PDF/X-4 & Adobe PDF Print engine detail information, Improve style of writing
Oct. 17, 2012	The 15th Edition	Trueflow Ver5.01or later, EQUIOS Ver1.07 or later	EQUIOS related issues, Effects of RIP internal processing. PS workflow related issues, Adobe CS1/CS2 and QuarkXPress 6.5 are abbreviated
June. 27, 2018	The 16th Edition	EQUIOS Ver5.00 / 6.00 or later	Support for Adobe CS6. CC, CC2014 to CC2018 Trueflow issues and all versions of QuarkXPress are abbreviated

Download the latest DTP Output Gudeline from Screen Graphic Solutions Co., Ltd. site.

[http://www.screen.co.jp/eng/ga/product/category/workflow/equios.html]

Screen Graphic Solutions Co., Ltd.