PDF/X-4 for Digital Ad Submission:
Overview and Practice

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Magazines Canada

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INTRODUCTION

The purpose of this document is to provide an overview and best practices for creating PDF/X-4 files for digital ad submission to Canadian magazine publishers. It provides background information that explains the rationale behind the transition from PDF/X-1a to PDF/X-4 as the preferred file format for ad submission, as well as provides important information about the PDF/X-4 standard and how to create PDFs that are compliant to the PDF/X-4 standard.

About Magazines Canada

Magazines Canada is the national trade association representing Canadian-owned, Canadian-content consumer, cultural, specialty, professional and business media magazines. French and English member titles offer a wide range of topics including business, professional, news, politics, sports, arts and culture, leisure, lifestyle, women and youth, made available on multiple platforms. The association focuses on government affairs, services to the advertising trade, circulation marketing and the development of career skills for and the recognition of excellence among the people who work in Canada's magazine media.

digital Magazine Advertising Canadian Specifications (dMACS)

Magazines Canada produces and maintains the digital Magazine Advertising Canadian Specifications (dMACS), a set of requirements that govern how digital ads are supplied to Canadian magazine publishers. The dMACS has supported PDF/X-1a as trusted and reliable file format for submission of digitally supplied ad materials for Canadian Magazines for several years. Up until 2013, the PDF/X format that was supported by dMACS was PDF/X-1a.

The Manufacturing and Technical Standards Advisory Group (MTS)

The Manufacturing and Technical Standards Advisory Group (MTS) is a sub-component of Magazines Canada. The Manufacturing and Technical Standards Advisory Group's mandate is to explore leading edge, business-based manufacturing and technology issues, opportunities, specifications and industry standards which help to increase internal and external production-based efficiencies. In 2013, the MTS agreed that it was time to explore alternatives to PDF/X-1a as the required file format for digital ad submission. The MTS mandated the formation of the PDF/X-4 Pilot Work Group to determine whether or not Magazines Canada should endorse PDF/X-4 as the required format for Digital ad submission for ad materials being submitted to Canadian magazine publishers.

About PDF/X-4

In an attempt to create more consistency and reliability for PDF files created for print, PDF/X was developed as a way of standardizing the properties of PDF files that are created for the purpose of commercial printing. There are several different derivatives to the PDF/X file format, including PDF/X-1:2001, PDF/X-1a:2001, PDF/X-1a:2003, PDF/X-2:2003, PDF/X-3:2002, PDF/X-3:2003, PDF/X-4, PDF/X-4p, PDF/X-5g, PDF/X-5n, PDF/X-5pg.

PDF/X-4 is a relatively new PDF/X standard as far as PDF/X formats are concerned. The standard was ratified in 2008 (ISO 15930-7:2008), and revised in 2010 (ISO 15930-7:2010). The PDF/X-4 standard includes options and functions that take advantage of some of the newer design capabilities of common page layout programs. Specifically, it allows native transparency, optional content (layers) and better enhanced colour management capabilities.

There has been significant uptake of PDF/X-4, as a preferred file format for files designed for commercial print and packaging in Europe and North America.

OVERVIEW OF PDF/X-4

What is PDF/X-4?

PDF/X-4 is simply a registered standard that governs the creation of a PDF file to ensure it is created a specific way. When a file is saved out of a program as a PDF/X-4, the resulting PDF file meets a certain set of criteria. When a printer or magazine publisher receives a PDF/X-4 file, they can be certain of the settings that were used to create it. This in turn results in a more predictable output and fewer problems when the file is processed.

Creating a PDF/X-4 file is as easy as creating any other type of PDF file. There are even PDF presets for creating PDF/X-4 files in common page layout and Illustration programs like Adobe InDesign and Illustrator. If the program you use to create PDF files does not have a PDF/X-4 preset, you can still make PDF/X-4 compliant files quite easily.

How is PDF/X-4 Different From Other PDF/X Standards?

All PDF/X versions are international ISO standards that are recognized by most software and hardware used in file production for the graphic arts. By using PDF/X as the foundation for PDF creation, the validity and consistency of the files created can be better measured and achieved.

PDF/X-4 is the newest of the PDF/X standards. PDF/X-4 offers two significant features that other PDF/X formats do not: support for native transparency (PDFs are not flattened), and support optional content groups, such as PDF Layers. Support for these features was built into PDF/X-4 because many page layout and design applications used today support native transparency, and because the processing technology used by publishers and printers has also evolved to support native transparency and layers.

The ability to retain transparency within the PDF file is very important, as there are many issues that can arise from flattening transparency that can cause an undesirable outcome on output. Similarly, the ability to retain layers within the PDF file can be very advantageous for jobs that require versioning. For example, magazines that have language changes or content changes by region can have editorial or advertising changes created using layers in a single file instead of using multiple files. Changing one half-page ad with another could be as simple as turning a layer on or off in a final PDF file prior to output. This can minimize errors that can sometimes occur when dealing with multiple versions done as separate files. If for example, there is a type correction on an editorial page that is run with different partial ads for different regions, using layers guarantees that the type correction is done for every version because there is only one file to change.

Why is Magazines Canada Endorsing PDF/X-4?

If you have supplied digital ad content to magazine publishers, or ever referred to the digital Magazine Advertising Specification (dMACS), you may be familiar with the PDF/X-1a file format. Magazines Canada, through dMACS, has long supported PDF/X-1a as the format for digital ad submission. The reason for this is quite simple: PDF/X1-a has long proven to be a reliable and predictable file format for print. So why is changing to PDF/X-4?

The answer is simple really. Technology has evolved beyond the scope that existed when PDF/X-1a was created. In some cases, the PDF/X-1a format can be restrictive because of its limitations. Sometimes, complex designs that involve transparency may render incorrectly when saved as a PDF/X1-a file. Also, because PDF/X-1a cannot support layers, jobs that require versioning can pose challenges and can be unnecessarily time consuming.

How Does Magazines Canada Know PDF/X-4 is a Reliable Replacement for PDF/X-1a?

In 2013, the The Manufacturing and Technical Standards Advisory Group (MTS) of Magazines Canada agreed that it was time to explore alternatives to PDF/X-1a as the recommended file format for digital ad submission for Canadian

magazines. The MTS mandated the formation of a working group to determine whether or not Magazines Canada should endorse PDF/X-4 by making it the new ad submission file format in dMACS. The members of the PDF/X-4 Pilot Work Group included Content (ad) creators, magazine publishers, printers, and educators. The group decided that in order for it to consider endorsing PDF/X-4 as the new standard for digital ad submission, it would have to be confident that complex PDF/X-4 files could be processed with the same (or better) consistency and reliability across multiple printer/publisher sites as the current PDF/X-1a standard.

A comparison of PDF/X-1a and PDF/X-4		
	PDF/X-1a	PDF/X-4
An ISO Standard	Yes	Yes
Supports CMYK and Spot Colours	Yes	Yes
Supports non-CMYK Print Characterization Spaces	No	Yes
Allows for Colour-managed Data	No	Yes
Retains Transparency	No	Yes
Supports Layers	No	Yes
Supports JPEG2000 Compression	No	Yes
Supports JBIG2 compression	No	Yes
Supports 16-bit Images	No	Yes

The PDF/X-4 Pilot group used a set of technically complex and challenging pages to determine whether or not the PDF/X-4 files would render correctly and consistently across many different sites using different workflow technologies. Included in the test pages were 32 patches from the Ghent PDF Output Suite 4.0, and two specially designed pages created by Graphic Communications Management Students at Ryerson University, using design features that have been known to be problematic for PDF/X-1a files on account of the flattening.

The results of the testing proved that PDF/X-4 was not only predictable and reliable, but that pages that rendered incorrectly when saved as PDF/X-1a rendered correctly when saved as PDF/X-4. Based on these results, the PDF/X-4 Pilot Work Group felt the tests provided it the confidence to recommend the consideration of PDF/X-4 as a new standard to be endorsed by Magazines Canada and included in future releases of the dMACS.

What Will This Mean for Ad Suppliers?

Ad suppliers that are used to supplying ads through AdDirect or other digital submission means will be required to submit PDF/X-4 files instead of PDF/X-1a files. This will require altering the way PDF files are saved. There are several acceptable methods of producing a PDF/X-4 file, and it can be as easy as using existing PDF Presets in several different page authoring programs.

The most significant consideration when switching from PDF/X-1a to PDF/X-4 is that PostScript cannot be used to create PDF/X-4. If your workflow includes creating a PostScript file and then distilling it into a PDF file, you will have to consider an alternate way of making your PDF files. The reason for this is that PostScript cannot support the advanced features (transparency, layers, etc.) that are supported by PDF/X-4. If you save your design as a PostScript file, you are essentially flattening the file in much of the same way as you would for a PDF/X-1a file.

PDF/X-4: Best Practices

One of the easiest ways to create a valid PDF/X-4 file is to use the built-in PDF/X-4 settings found in most page authoring programs. Since Adobe InDesign and Adobe Illustrator are commonly used to create magazine ads, we will look at these two programs in detail. It should be noted however that there is similar functionality built into other page authoring programs as well.

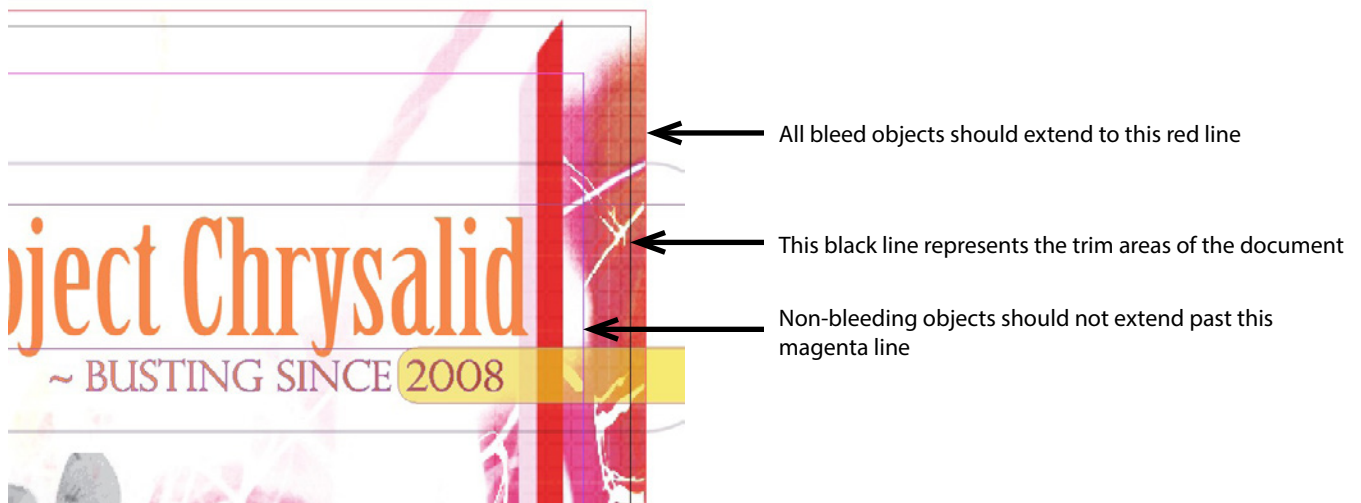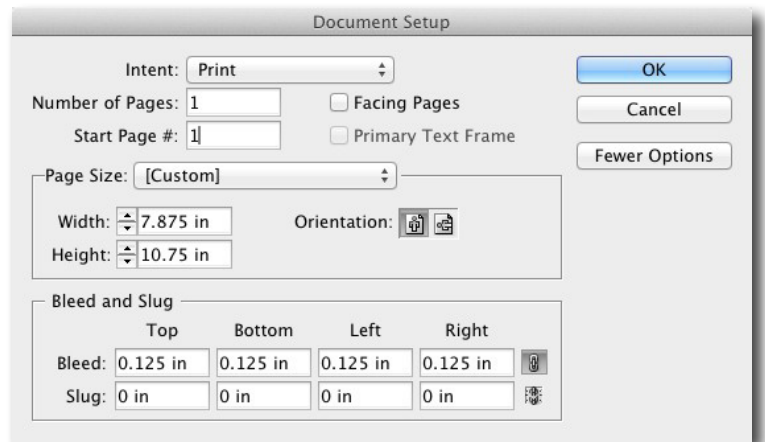## Creating a PDF/X-4 File Using a PDF Preset in Adobe InDesign

This section will take you through the process of creating a valid PDF/X-4 file directly from Adobe InDesign. The process is relatively simple, and if followed correctly, there will be a greater likelihood that your ad will pass all preflight checks and reproduce the way it is intended.

Step 1: Check your file set up and construction

It is always good practice to check your document settings before exporting your PDF. In particular, you want to make sure that the page size matches the dimensions specified by the magazine for the type of ad you have. Note that the dimensions of your page should be the finished trim size of the page, and should not include any allowance for bleed.

Bleed (if required) should be defined under the Bleed and slug section of Document Setup. The normal bleed allowance for magazines ads is 0.125 inches (1/8 of an inch). If your ad requires bleeds, it is important that all bleeding objects extend beyond the trim by 0.125 inches.

Below is a screen capture from Adobe InDesign showing a red guideline for bleed margin, a black guideline indicating the trimmed size of the document, and a magenta line indicating the margin (live area) of the document.

All bleed objects should extend to this red line

This black line represents the trim areas of the document

Non-bleeding objects should not extend past this magenta line

Step 2: Check for missing fonts and images

It is important that all fonts and images used in the ad are present and linked. Images should also be checked to ensure their resolution meets the requirements for the publication.

Step 3: Save the PDF/X-4 file

Saving a PDF/X-4 file from InDesign is quite easy. There just a couple of settings that need to be confirmed, some defaults to change, and you are ready to go.

Start by choosing the PDF/X-4:2008 preset in InDesign:
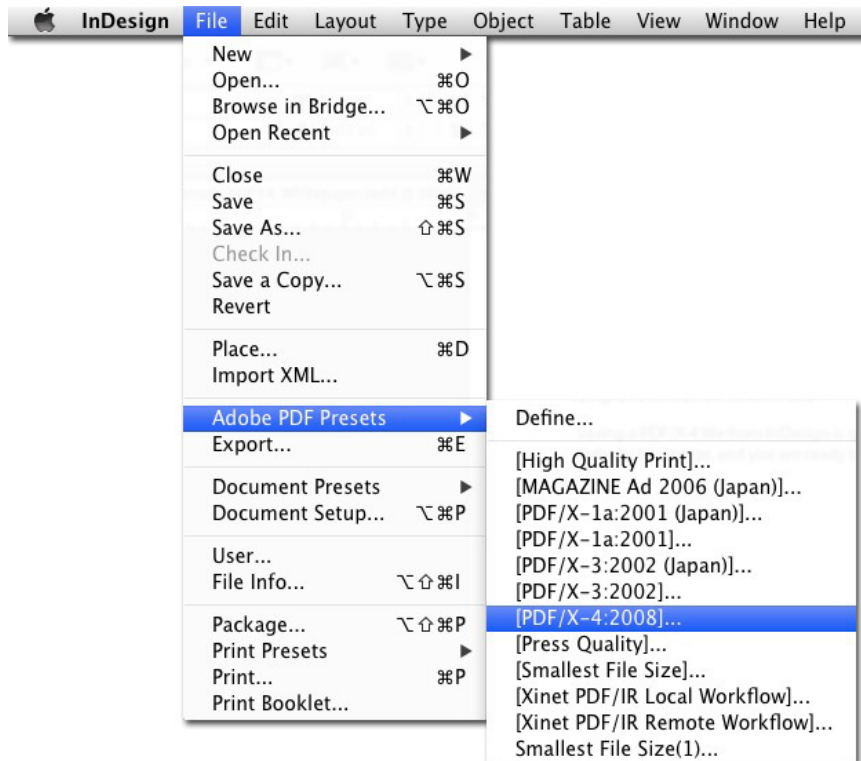
By choosing this PDF Preset, the majority of the settings needed to create a conforming PDF/X-4 file are already set. In particular, the correct version of PDF is selected automatically (Acrobat 7 - PDF 1.6), and the standard "PDF/X-4:2010" is chosen (even though the preset is called PDF/X-4:2008). These two settings are very important. In order for a PDF file to retain transparency and layers, a PDF version of 1.5 or higher must be used. The PDF/X-4 preset used in InDesign uses PDF 1.6, which not only meets the criteria for layers and transparency, but also conforms to the requirements for saving a PDF/X-4 compliant file from InDesign.

Once you select the PDF/X-4 preset, you will be asked to save the PDF file. As a general rule, give your PDF file a name that is short yet descriptive.

Once you save your PDF file, the Export Adobe PDF settings will appear. As mentioned before, almost all the defaults are suitable for saving a magazine ad as a PDF/X-4 file. There are just a couple settings that need to be changed.
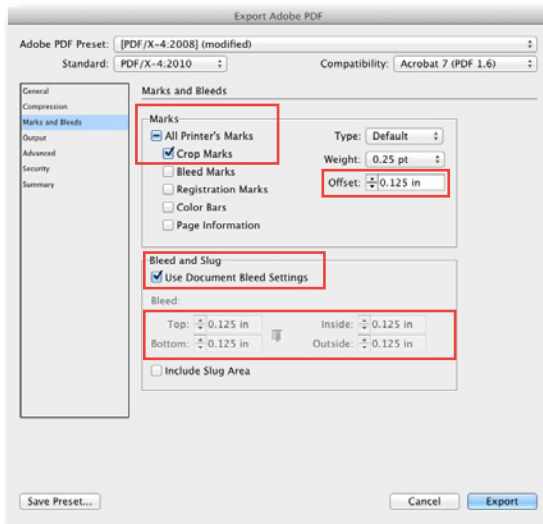
There is nothing that needs to be changed under the "General" or "Compression" tabs of the Export Adobe PDF window.

Under the "Marks and Bleeds" tab, it is important to turn on Crop Marks. There is no need to activate the other Printers Marks. When crop marks are selected, the Offset allowance for those marks should be adjusted to be 0.125 inches to ensure the marks do not print in the bleed area.

If bleeds were defined in Document Setup, the Use Document Bleed Settings option can be checked. If bleeds were not defined as per above, the amount of bleed can be manually entered in the Bleed section. Either way, the bleed amount of your document should be indicated under Bleeds.

In the output tab of the Export Adobe PDF window, Color Conversion should be changed to Convert to Destination (Preserve Numbers). Under Destination, the ICC Profile SWOP2006_Coated3v2 should be selected. If you do not have this profile installed on your computer, you can download it for free at www.idealliance.org. When the Destination is set to SWOP2006_Coated3v2, the Output Intent Profile Name should also change to SWOP2006_Coated3v2.

As with the General and Compression tabs, there is nothing to change in the Advanced or Security tabs.

If everything is done correctly, there should not be any errors or warnings in the Summary tab.

Once you have confirmed all the settings are correct, you can click on Export to save the PDF.
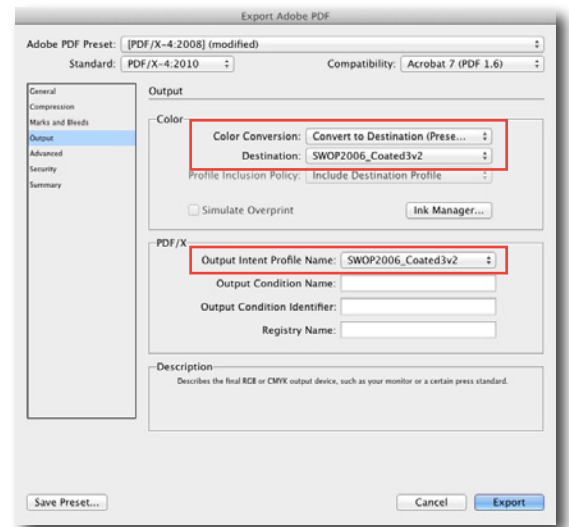
Creating a PDF/X-4 File Using Adobe Illustrator

This section will take you through the process of creating a valid PDF/X-4 file directly from Adobe Illustrator. The process is slightly different from InDesign, but still simple to follow.

Step 1: Check your file set up and construction
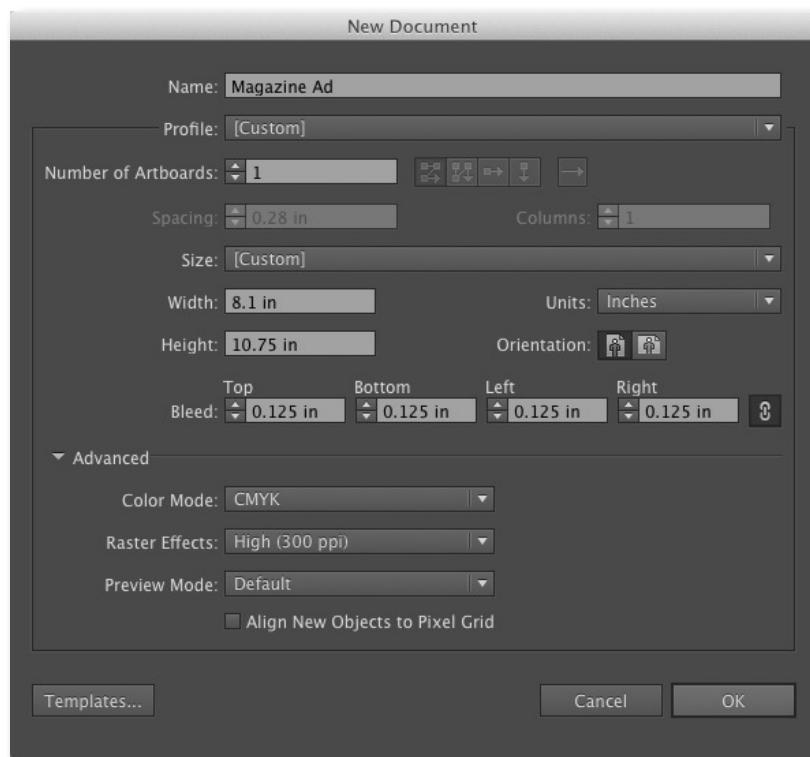
The rules for Document Setup in Illustrator echo those of InDesign. Your page size should be set to the dimensions of the ad as specified by the publisher. If your ad bleeds, bleed areas can be defined here.
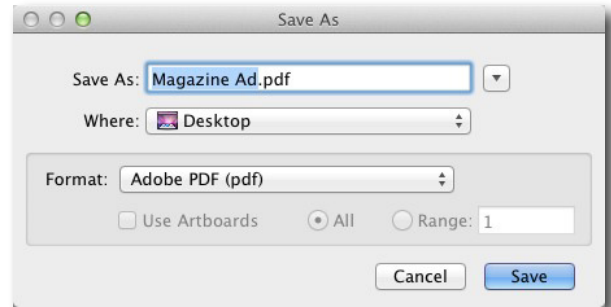
Note that when setting up an Illustrator document, there are some important settings under Advanced. Be sure to set Color Mode to CMYK, and Raster Effects to High (300 ppi).
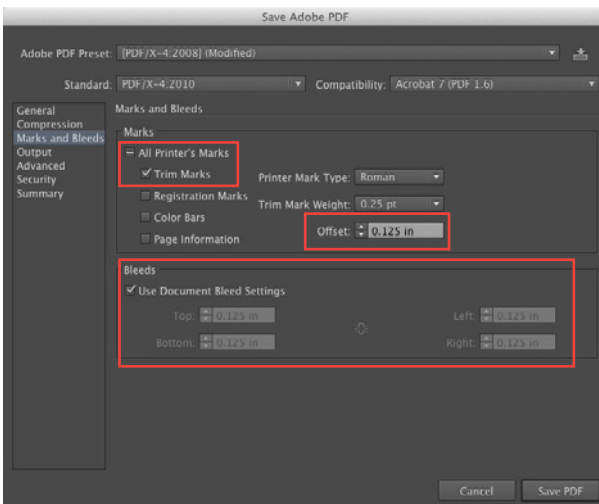
Step 2: Save the PDF/X-4 file
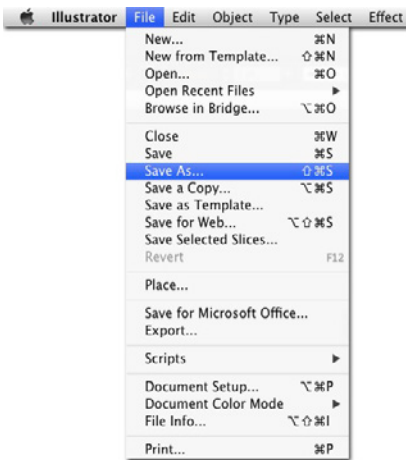
To save a PDF/X-4 files from Illustrator, the procedure is to choose Save As from the File Menu, and choose Adobe PDF (pdf) as the Format and click Save.

From this point on, the process for saving a PDF/X-4 file is pretty much the same as it is in InDesign.

The PDF/X-4:2008 Adobe PDF Preset should be selected.

As before, there is nothing that needs to be changed under the "General" or "Compression" tabs of the Export Adobe PDF window.

In the Marks and Bleeds tab, Trim Marks should be checked, but no other Printer's Marks. The Offset should be adjusted to 0.125 inches to avoid having the crop marks print in the bleed area. It is important to define the bleed area, either by checking Use Document Bleed Settings, or by manually entering in the values under Bleeds.
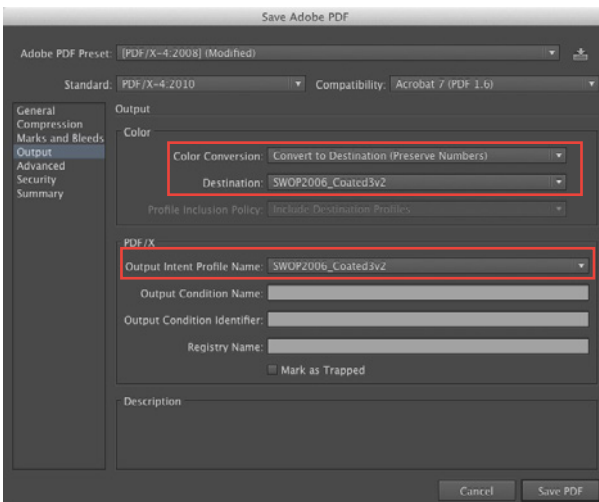
In the output tab of the Save Adobe PDF window, Color Conversion should be changed to Convert to Destination (Preserve Numbers). Under Destination, the ICC Profile SWOP2006_Coated3v2 should be selected. If you do not have this profile installed on your computer, you can download it for free at www.idealliance.org. When the Destination is set to SWOP2006_Coated3v2, the Output Intent Profile Name should also change to SWOP2006_Coated3v2.

As with the General and Compression tabs, there is nothing to change in the Advanced or Security tabs.

If everything is done correctly, there should not be any errors or warnings in the Summary tab.
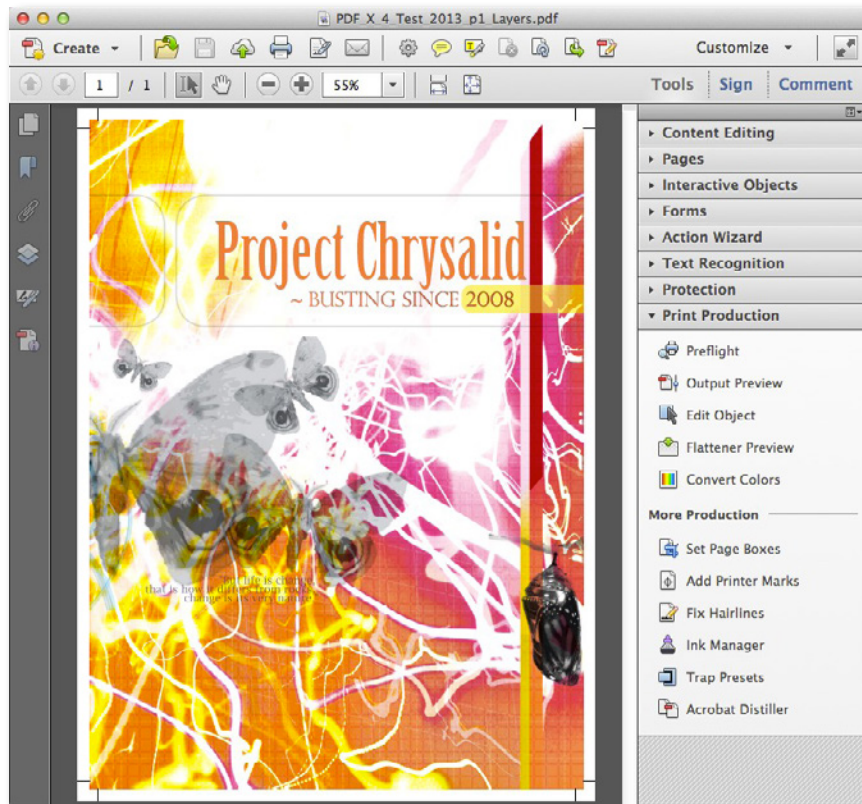
Once you have confirmed all the settings are correct, you can save by clicking on Save PDF.

Verifying PDF/X-4 Compliance

After a PDF/X-4 file is generated, there may be occasions when that file needs to verified to ensure it is in fact a PDF/X-4 file. There are few ways that we can check for PDF/X-4 compliance.

Using Adobe Acrobat Pro to Verify a PDF/X-4 File (Recommended)

Adobe Acrobat Pro contains built-in preflight profiles that will verify PDF/X-4 compliance. The Preflight Tools can be found in the Print Production Panel. In the Preflight Palette, choose the Profile named "Verify compliance with PDF/X-4", and then click Analyze. This will give you a pass/fail result.
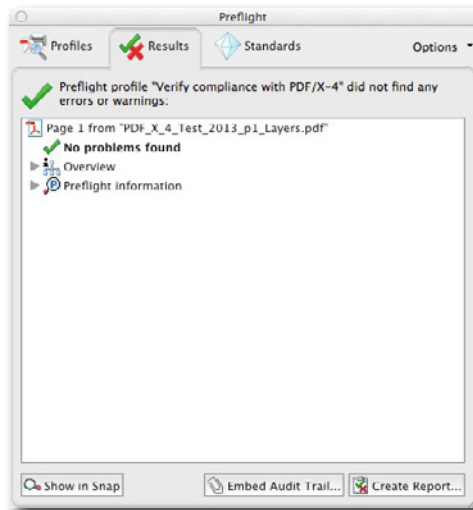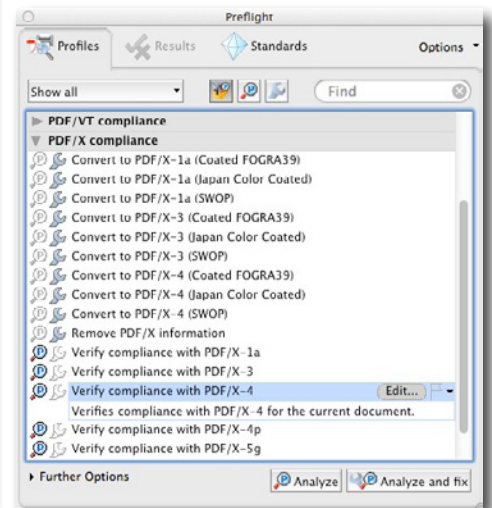
If you use this tool, and the result is a pass, you can be confident that the file you have created is a valid PDF/X-4 file that conforms to the standard. This will make your digital ad submission process quicker and more efficient, with less chance of errors on submission.

Using Adobe Reader to Check a PDF/X-4 File

If you do not own a copy of Adobe Acrobat Pro, there is limited ability to verify PDF/X-4 compliance within Adobe's free Reader application to check whether or not a PDF file is PDF/X-4. It should be noted however that this method is very limited, and does not actually validate the file in the same way as Acrobat Pro does.
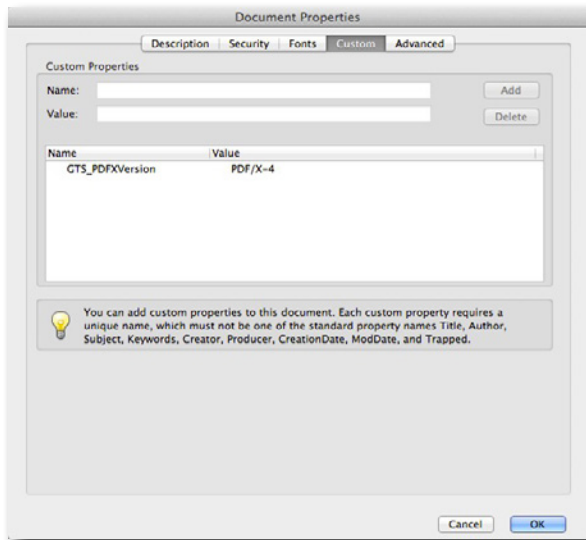
In Adobe Reader, choose Properties from the File Menu. In the Document Properties window, click on the Custom tab. If the file was saved as a PDF/X-4 file, there should be a custom property with the name "GTS_PDFXVersion" with a value of "PDF/X-4".

This tag is an indicator that the file is a compliant PDF/X-4 file; however, as mentioned earlier, this is not the same level of validation that can be achieved using Adobe Acrobat Pro.

Other PDF/X-4 Tools

In Addition to Acrobat Pro and Reader, other industry standard tools such as Enfocus PitStop Pro and callas pdfToolbox that can verify a pdf for compliance with PDF/X standards.

CONCLUSION

PDF/X-4 is a PDF standard that enables PDF files to retain many beneficial design functionalities such as transparency and layers. As an ISO standard, the PDF/X-4 file format allows for consistent and predictable PDF creation. Modern workflows used by magazine publishers and printers can take advantage of the expanded functionality of PDF/X-4 files. The Magazines Canada AdDirect Ad Portal can accept and process PDF/X-4 files.

After extensive internal and external testing, Magazines Canada has concluded that PDF/X-4 is the preferred file format for digital ad submission, greatly reducing errors that can occur from flattening transparency when creating PDF/X-1a files. Creating a PDF/X-4 file is no more complex than creating a PDF/X-1a file, yet offers more advantages and options.

Magazines Canada endorses PDF/X-4 as a reliable and consistent file format for digital ad submission for Canadian magazines.

RESOURCES

The following is a resource list that contains links to supplemental information.

Magazines Canada

Digital Magazine Advertising Canadian Specifications (dMACS) - http://www.magazinescanada.ca/advertising/production/dmacs_specifications

AdDirect: Magazines Canada Ad Portal - https://addirect.sendmyad.com

PDF/X-4

PDF/X-4 and the Adobe PDF Print Engine, Graphic Arts Magazine - http://graphicartsmag.com/articles/2010/05/pdfx-4-and-the-adobe-pdf-print-engine/

The Ghent Workgroup - www.gwg.org

ICC Profiles

International Color Consortium - http://www.color.org

SWOP/GRACoL ICC Profiles - http://www.idealliance.org/downloads/swop-2006-gracol-2006-icc-profiles