Best practices for producing high quality PDF files

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Adobe's Portable Document Format (PDF) is a popular means of sharing documents, especially those formatted for print. PDF files — when prepared properly — also provide an excellent archival file format.

The two most common ways to begin creating PDF files are with applications like Microsoft Word and by a scanning process that starts with printed materials. Below you'll find recommendations for producing high quality PDF files using each of these methods, using Adobe Acrobat Professional.

General guidelines for creating high quality documents

Enhancing the usability and appearance of your document via the following will do two important things: It will produce a more attractive print version and it will make your document easier to use for everyone, including those with disabilities. These instructions assume you're using Microsoft Word; the same principles apply regardless of the program you use, though, and following these guidelines will help you create more usable and accessible web pages if you're converting from Word to HTML.

- Use Word's "Styles" (found in the **Home** tab, or via the **Format** menu on the Mac) to identify headers, paragraphs, lists, and other structural elements. Create your own styles to add special formatting, rather than simply using the formatting toolbar to e.g. change fonts or italicize blocks of text.
- Include alternative text for all images and links, and place labels (such as "Figure 1.") near the images they refer to. You can do this in either Word or Acrobat when using Windows, and in Acrobat using a Macintosh.
- If you use a multi-columned layout, use the **Format > Columns…** feature in Word. Do not create 'virtual' columns using tabs, spaces, or tables.
- Create tables using either Word's **Insert > Table…** feature to create a proper table. Do not "nest" data tables by putting one table inside another. Use a distinctive cell for each data entry.
- If your document includes images, use the following resolutions.
    - Color and grayscale: 400 pixels per inch minimum, JPEG compression w/Maximum image quality.
    - Monochrome: 600 pixels per inch, CCITT Group 4 compression or ZIP.
- Place any header and footer information (e.g., page numbers, notes, citations) in header and footer windows/areas rather than manually inserting them at the top or bottom of each page.
- For long documents, include a table of contents or other document guides with in-document links (bookmarks or anchors) that jump to specific sections of the text.
- For file names:
    - Use ASCII letters (a-z, A-Z), digits (0-9), underscores and hyphens ("_" and "-").
    - Do *not* use spaces, quotation marks, diacritic marks or other special/non-printing characters.
    - Reserve the period (".", full stop) for the file extension at the end of the filename.

For more details on creating accessible and usable documents, consult the tutorials available at <*http://wac.osu.edu*>, from which portions of these recommendations have been adapted. You can also consult the Library's Knowledge Navigation Center <*http://www.lib.umich.edu/knc/*> for help setting up your documents. Adobe also provides detailed guidelines for usability accessibility at <*http://www.adobe.com/accessibility/*>.

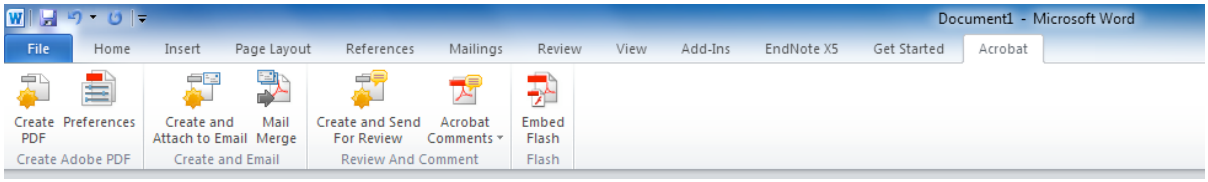
Creating PDF files with MS Word and Adobe Acrobat in Windows

You can create PDF files from within Microsoft Word when you have the Adobe Professional software. *Note that Acrobat Professional is* not *the same as Acrobat Reader, the latter being a free product with limited capabilities.* When configured properly, the resulting PDF files will be of high quality and suitable for deposit in Deep Blue.

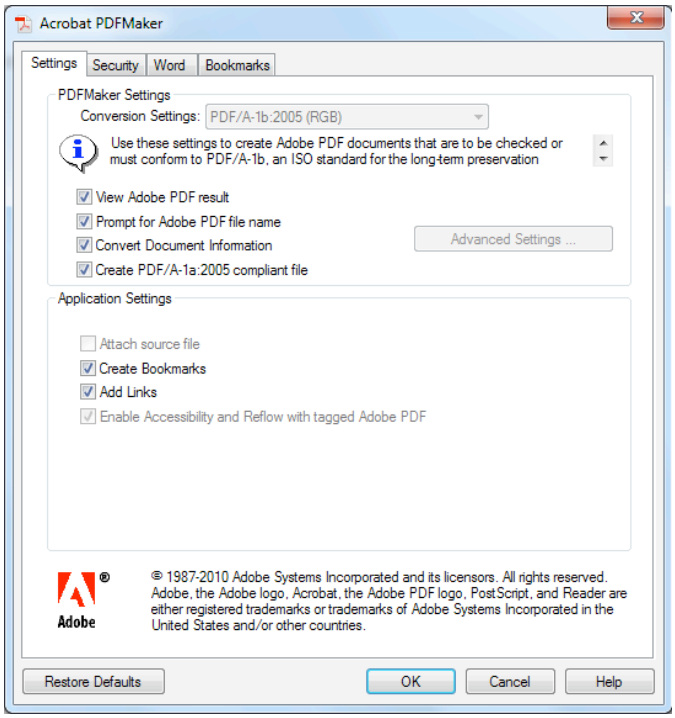
Fortunately, if you make sure your images are of the appropriate resolution then MS Word and Acrobat take care of *most* of the rest for you automatically. So, be sure to use the following settings for your images:

Use the following steps to configure Adobe Acrobat X and create PDF files from within a supported application such as Microsoft Word 2010. (The steps are similar for earlier versions of Word and Acrobat.)

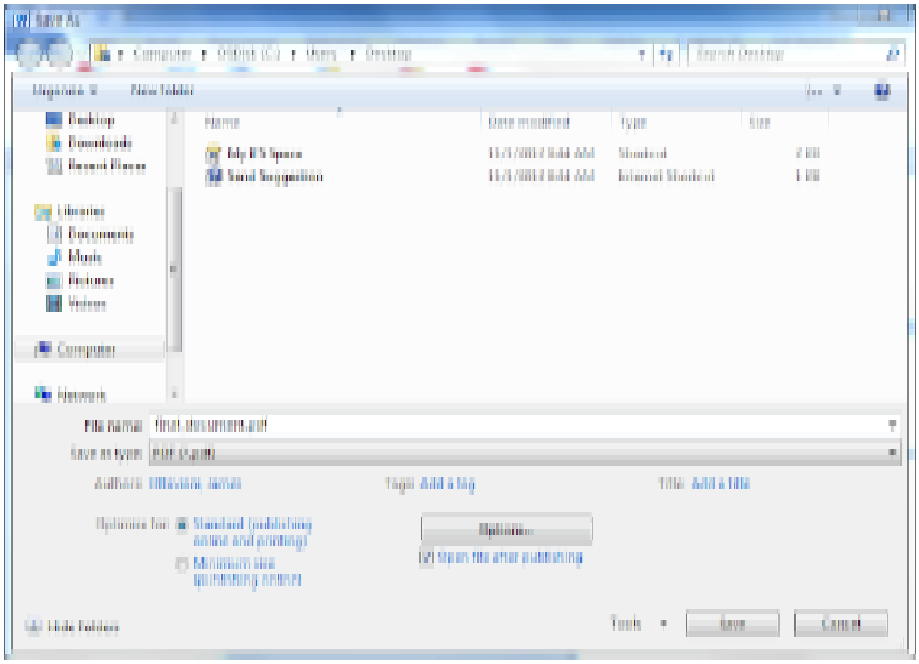
1. Under the **Acrobat** menu, select **Preferences** in the **"Create Adobe PDF"** section.



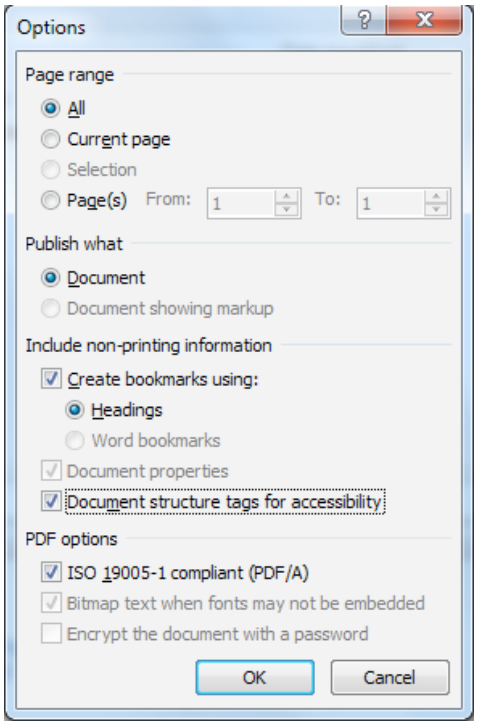
2. A new window will appear, as shown below. In **Settings**, select "PDF/A-1b:2005 (RGB)" from the **Conversion Settings** menu, check "PDF/A-1a:2005 compliant file" and make sure "Create Bookmarks", "Add Links", and "Enable Accessibility and Reflow with tagged Adobe PDF" are all selected.



3. To create a PDF from a finished document, under the **Acrobat** menu select **Create PDF**. You will be prompted to save the PDF file, as shown. Name the document, and then click on "Options…"



4. Here, you can assure you're creating bookmarks and structure tags, and that the PDF is in fact PDF/A compliant. When you've made the selections, click on "OK" and then finish saving the document.

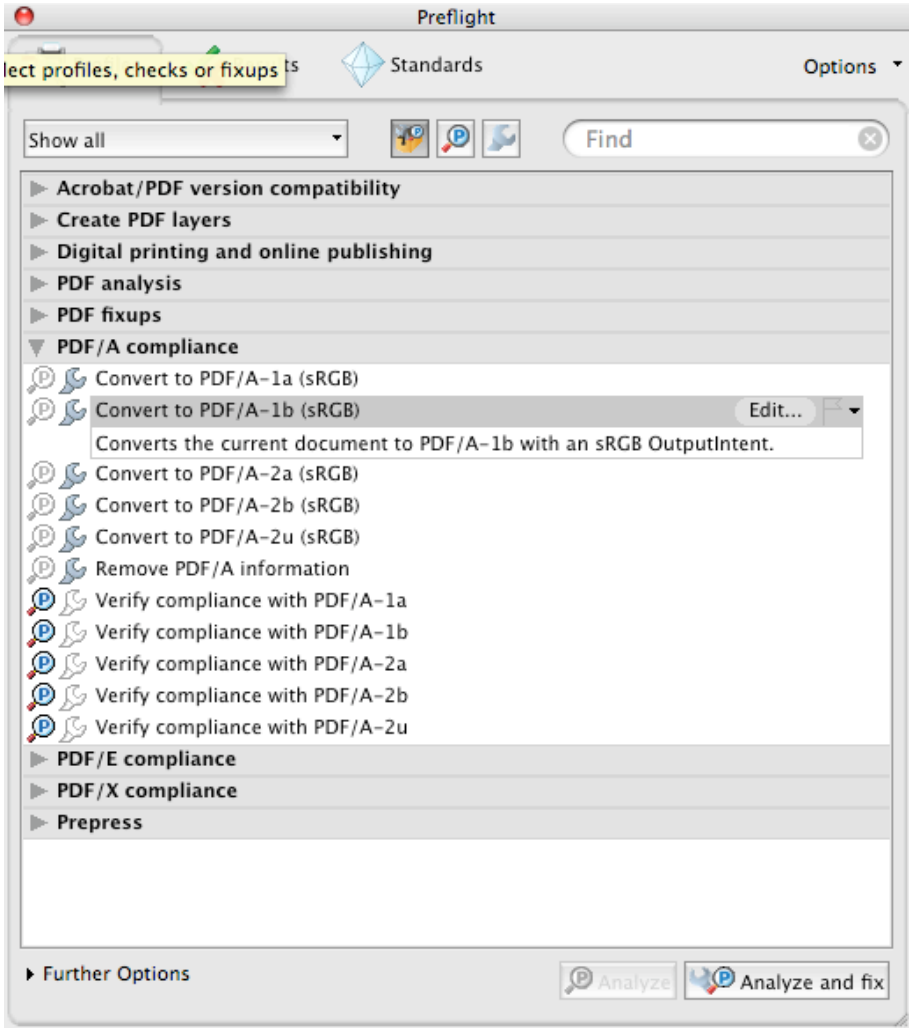


Creating PDF files with MS Word and Adobe Acrobat on a Macintosh

As per above, you can produce high quality PDFs using Microsoft Office 2011 and Acrobat Professional (version X) software. *Note that Acrobat Professional is* not *the same as Acrobat Reader, the latter being a free product with limited capabilities.*

Fortunately, if you've made sure your images are of the appropriate resolution then Word and Acrobat take care of *most* of the rest for you. To complete the work:

1. Create the PDF by choosing **File > Save As…** and select "PDF". The resulting file may *not* be fully compliant with the archival standard, but the essential features (embedded fonts, appropriate resolution for images) will be taken care of automatically.
2. Open the PDF in Acrobat Professional, choose **Edit > Preflight…** and click on the arrow next to "PDF/A Compliance" and select "Convert to PDF/A-1b (sRGB)".



3. Click the "Analyze and fix" button and you will create a well-formed PDF/A when you save the file. We recommend appending **"_A"** to your file name, just before the .pdf extension.

4. You can also click on "PDF fixups" and select "Embed fonts" and then "Analyze and fix" to confirm that your fonts embedded properly.

Improve an existing PDF's usability and accessibility using Acrobat Professional

- Open your document in Acrobat Professional, and choose **File > Properties…** to determine whether the document has tags ("Tagged PDF: Yes/No"); those created using Microsoft Word on a Macintosh may not. If not, under the **View > Tools > Accessibility** menu, choose **Full Check**. This will highlight any problems in the document, and guide you in creating tags, alternative text for images, specifying a language, and enhancing the document in other ways.
- You can also add bookmarks to further aid in navigation. These don't fully substitute for tags, or for structuring the document so that there's a clear, logical reading order. But they will assist all readers in getting to the information they want and need faster.
- Finally, returning to **File > Properties…**, if you're using security settings to restrict copying, before applying them make sure that the "Enable Text Access for Screen Reader Devices for the Visually Impaired" option is checked.

To create PDF files by scanning print material: General principles

PDF files may also be created by scanning print materials. From almost every perspective, such methods are less preferable than creating PDF files directly from an application as described above due to increased file size and compromised viewing, printing, and usability characteristics. Nevertheless, PDF files created from scanning are a reliable way to preserve materials when no other options are available. Regardless of the method, the produced PDF file should have the following properties:

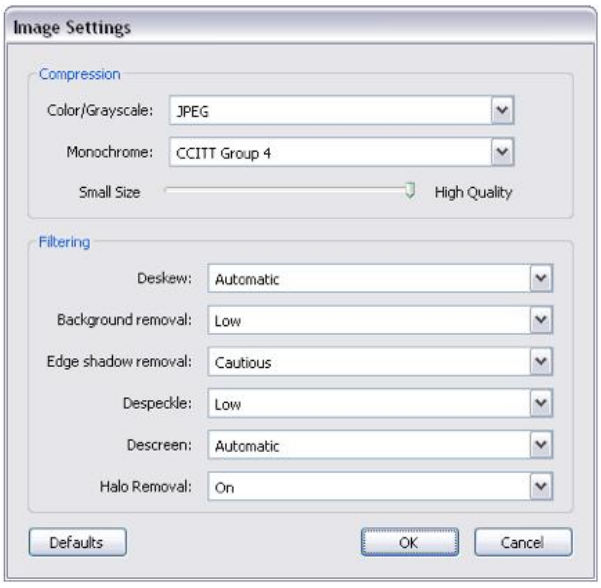
- All materials should be scanned at 100% scale to the dimensions of the original.
- Pages containing text and/or line art should be monochrome (black and white), 600dpi (or 300dpi for oversized materials greater than 11x16 in/28x41 cm), and be compressed using ITU Group IV compression.
- Pages containing photographs and/or illustrations should be 24-bit color using the sRGB color space or 8-bit grayscale, 400dpi (or 300dpi for oversized materials greater than 11x16 in/28x41 cm), and be compressed with JPEG compression using the highest quality setting.
- Missing or blank pages should be represented as blank images of the same size as the original.
- The PDF file should be optimized and should be in ("Searchable Image (Exact)"/"Image+Text") format.
- If your process creates intermediate files (TIFF, PostScript, etc.), it must not change the resolution of the original scans (down sampling) or use lossy compression such as JPEG. (These methods, although they do reduce file size, will cause irreversible quality loss.) TIFF is an excellent choice for an intermediate file format, and acceptable compression schemes (which can all be used in combination with TIFF) are ITU Group 4 (for black and white material only), LZW, and Flate (Zip).
- If possible, embed OCR (optical character recognition) generated text in the document.
- The PDF should have tags and bookmarks as described elsewhere in this document.

To create PDF files by scanning print material: Using Adobe Acrobat Professional

Adobe Acrobat Professional has built-in scanning capabilities that can be used to create PDF files using printed materials. *Note that Acrobat Professional is* not *the same as Acrobat Reader or Acrobat Standard; only Acrobat Professional has support for scanning.* Use the following steps to create PDF files using a scanner with Adobe Acrobat Professional. These steps apply to both Windows and Macintosh, with only slight variations in appearance:

1. From the **File** menu, select **Create > PDF from Scanner**. Select your scanner device, choose **Front Sides** or **Both Sides** as appropriate, select **Recognize Text Using OCR**, and select **Add Tags To Document**.

2. Click **Image Settings**. A new window will appear. In this window, change the settings as shown.



3. Click **Scan**.

Creating PDF files on a large scale

If you need to create a large number of PDF files, these approaches will not be efficient for you, although the principles outlined here apply equally to a large-volume operation. Before you start your project, contact us and we will be happy to provide advice to your staff or to your scanning vendor to make sure that your materials are in the best possible form for preservation. The Library's Knowledge Navigation Center <*http://www.lib.umich.edu/knc/*> can help you get started with this.

Questions?

If you have any questions, please contact us at deepblue@umich.edu and we will be happy to help you if we can.

Suggested citation for re-use

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