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# File Preparation Guide

for wide format printing

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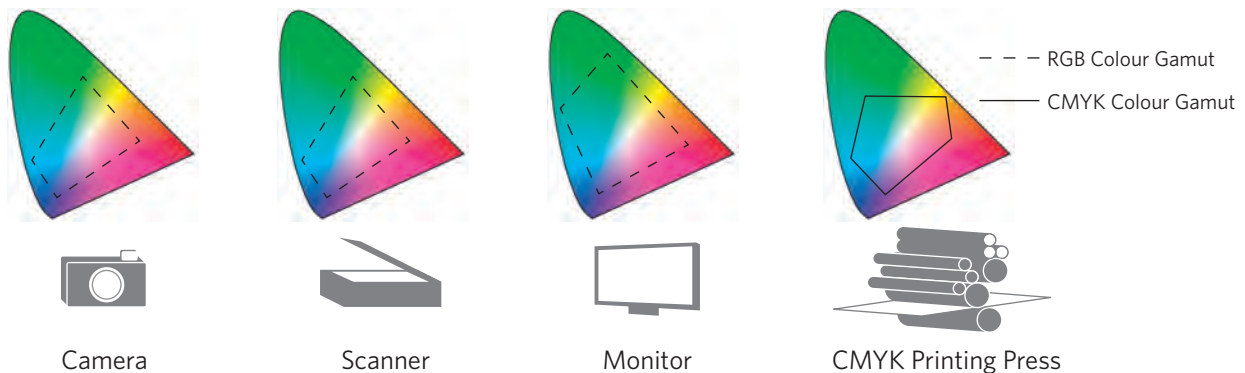
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# Colour Management Basics

## Colour Management in a Prepress Environment

Input, output and viewing devices use different colour modes to capture, display or print images. The various colour modes differentiate greatly in the amount of colours they can reproduce. For example, a digital camera captures RGB light with a wider gamut than what is reproduced when printed in CMYK mode onto paper.



In a prepress workflow, a colour management system will provide consistent and predictable results when using multiple devices with various colour gamuts. Colour Profiles control the colour matching between the different devices. They define a viewing intent and are also used in the conversion process from one colour mode to another (e.g., RGB to CMYK).

## Colour Management Essentials

- Calibrated Monitor
- Proper workspace and viewing lighting conditions
- Proper use of colour profiles
- Proper use of Colour Management System (CMS) in the applications

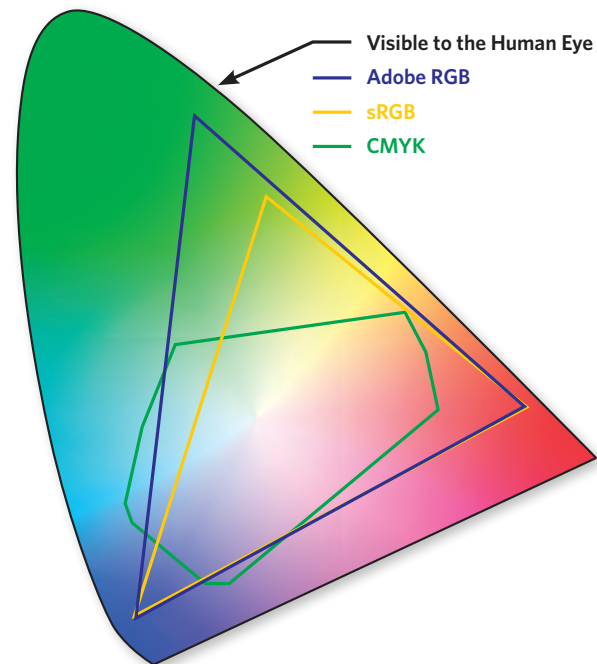
# Colour Management Basics

## Gamut

Gamut refers to the colour range a viewing or output device is capable of displaying with ink on paper or other means of colouration.

The graphic below represents the visible spectrum the human eye can see and the possible range of each of the two different RGB colour spaces, as well as the gamut constraint of the CMYK colour mode.

All digital printers have device-dependent colour spaces. Even though a particular device, such as a printer, may use the CMYK colour space, the colours it renders for specific CMYK values are often slightly different than all other types of CMYK printers. For example, printing a CMYK formula of 80/20/60/5 on Printer A & Printer B would result in two greens that do not look exactly the same. To match Printer B to Printer A the CMYK values used on Printer B would need to be tweaked to a new formula (eg. 83/19/6¼). Furthermore, each CMYK printer has a slightly different CMYK gamut; therefore a CMYK colour produced on Printer A might not be reproducible on Printer C. Hemlock Display recommends supplying a Pantone number to your Sales Representative for matching colour critical projects.

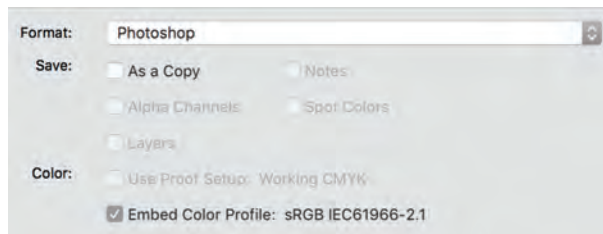


# Colour Management Basics

## Colour Profiles

### RGB Colour Profiles

Most input devices such as cameras and scanners will assign a profile when saving the file. These RGB profiles are an integral part of a colour managed workflow. The profiles define a viewing intent and play a role in how an image will convert from one colour mode to another (e.g. RGB to CMYK). It is therefore important to embed the profile when saving an image from Photoshop.



The “Embed Color Profile” ... must be checked to avoid unexpected results in a colour managed prepress workflow.

Same RGB image with different outcomes:



Saved image with embedded colour profile.



Saved image without colour profile. A default colour profile was used when converted from RGB to CMYK.

# Colour Management Basics

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The most common RGB profiles are:

- **Adobe RGB (1998)** - has a larger range of colours (gamut) and is considered the standard for a prepress workflow.
- **sRGB IEC61966-2.1** - is considered an alternative profile to Adobe RGB (1998). sRGB IEC61966-2.1 is intended to look good for viewing on a monitor and most output situations. However, conversion errors from RGB to CMYK are more likely to occur when using sRGB IEC61966-2.1 rather than Adobe RGB (1998).

Hemlock Display's recommended input profile is Adobe RGB (1998).

## **CMYK Colour profiles**

If you are planning on converting RGB to CMYK, it is important to choose the correct output (CMYK) profile for the specific requirements of a project. Hemlock Display recommends using GRACoL 2006 (ISO 12647-2:2004) as an output profile as it reproduces colour the best across our printers. It is one of the many CMYK output profiles available in Photoshop.

## **Converting from RGB to CMYK can be performed in the following places:**

- Photoshop
- InDesign when exporting the pages to PDF
- Illustrator when saving as a PDF
- Hardware/Software systems that control the output device

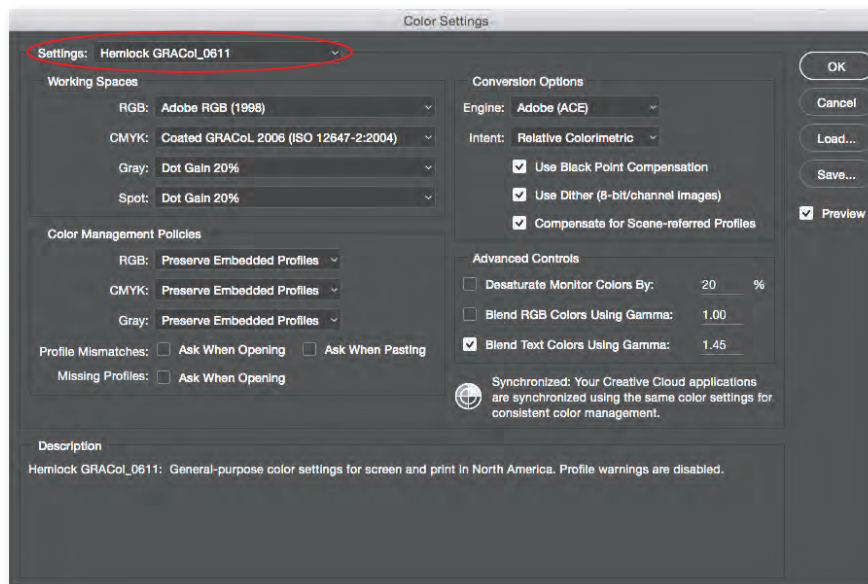
# Colour Management Basics

## Setting Up a Colour Managed Work Flow in Adobe CC

### Color Settings File (CSF) in Photoshop

To ensure colour consistency throughout all applications in Adobe CC, the correct CSF must be installed and synchronized.

Photoshop's Color Settings:



A Color Settings File (CSF) can be requested from Hemlock Display in order to match our specifications.

It is also possible to create a custom CSF. Go to: **Photoshop > Edit > Color Settings** and save the CSF file. It can then be synchronized with other Adobe applications.



# Large Format Printing

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## **File Preparation for Large Format Printing**

The page set-up requirements and the handling of fonts and PANTONE colours are different than what is commonly used in an offset or small format digital print environment. Please read this file preparation guide to learn how to submit files for large format print projects. Following these few simple steps will ensure a trouble-free prepress process and a timely delivery of your order. It will also reduce the risk of incurring additional costs.

# Large Format Printing

## Document Set-Up

When starting with a print project you must ensure that the following is entered in the New Document set-up menu correctly:

### Document size = Trim

It is recommended to set-up your document size at 100% scale (final output size). This will allow you to confirm the final input resolution of placed images and the required bleed allowances.

**Bleed** is the extra image that is added to your design to make sure there is no white border when the job is trimmed or folded for hemmed edges.

The standard bleed requirement for Large Format work is 0.25" minimum all sides except for large wall/window graphics and/or hemmed banners where the bleed requirement is 1" minimum all sides (2" bleed is preferred). Depending on the application of the graphic some projects can require up to 4" of bleed. For example, a wall might not be completely level or straight along the top and bottom edge and could require 4" of bleed to position the graphic in the correct spot. Please contact your Sales Representative for guidance on bleed settings when it comes to challenging applications.

Please verify that all images, graphics and flat tints meet the bleed requirements as noted above.

PRESET DETAILS

Banner

Width: 144 in

Height: 72 in

Pages: 1

Start #: 1

Columns: 1

Column Gutter: 0.1667 in

Margins

Top: 0.5 in

Bottom: 0.5 in

Left: 0.5 in

Right: 0.5 in

Bleed and Slug

Bleed

Top: 2 in

Bottom: 2 in

Left: 2 in

Right: 2 in

Slug

Top: 0 in

Bottom: 0 in

Left: 0 in

Right: 0 in

Facing Pages:

Primary Text Frame:

Preview:

Close Create

# Large Format Printing

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## **Document Set-Up cont'd**

The reason for the relatively large amount of bleed requirement is the challenge of handling large materials in the printing and finishing machines as well as the less than perfect front-to-back registration in the Wide Format printing process.

In the case of window and wall graphics, the large amount of bleed will aid in the installation process. The extra bleed will account for any uneven surface and any movements needed to create a seamless look.

## **Image Resolution**

When it comes to determining image resolution for offset or small format printing, a general rule is to use a resolution that is twice that of the output linescreen, or about 300-400 PPI. An image with more than 300-400 PPI will result in a file size that increases exponentially without any appreciable increase in quality. An image with less than 300-400 will yield jaggedness in edges and areas of contrast

Large format printed products such as banners, wall graphics, fleet graphics, or semi-trailer graphics can be larger than 10' x 20'. A 10' x 20' image with a resolution of 400 PPI would result in an almost unworkable 17GB file size. Therefore resolution settings need to be tailored for each specific large format product.

The three factors to take into account for determining image resolution are:

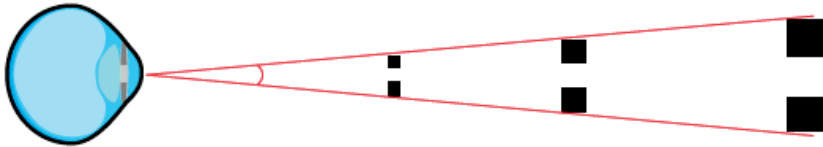
- Viewing Distance (pages 12-13)
- Viewing Conditions (page 14)
- Type of image (page 14)

# Large Format Printing

## Viewing Distance

The ability for the human eye to discern detail is known as visual acuity. The maximum acuity in the human eye is related to the diameter of the light sensing cones and rods on the retina which mathematically translates to an angle (30 seconds of an arc). As we view things from further away our ability to resolve detail diminishes.

Visual Acuity with Distance



To determine a standard for what resolution to use for each product, FOGRA suggests using the following resolution settings in the table below.

Item	Size	Viewing Distance	Resolution (PPI)
Postcard	4" x 6"	8"	860
Letter	8.5" x 11"	14"	500
Poster	36" x 48"	60" (5ft)	300
Transit Bus Shelter Ad	47" x 68"	82" (7ft)	150
Wall Graphics	120" x 150"	60" (5ft)	150
Semi Trailer	576" x 120"	588" (49ft)	20
Billboard	588" x 168"	661" (51ft)	15

# Large Format Printing

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120" x 150" Wallgraphic



Resolution 165 PPI at 100%

# Large Format Printing

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## Viewing Conditions

The viewing conditions of a graphic affect how likely a viewer will notice low-resolution artifacts like pixelization and jagged edges. Therefore questions like the ones below will need to be taken into consideration:

Is there ample illumination? Will it be moving? Will the viewer be moving? Is it possible that the viewer may be much closer than the estimated viewing distance.

For example, consider an interior wall graphic and a semi-trailer graphic that have the same dimensions. The interior wall graphic will be well lit and viewed close up. In this instance a higher resolution is necessary. The semi-trailer graphic would not need as high of a resolution since it would be moving as the semi drives and the lighting conditions change as the daylight changes.

## Type of Image

A soft focus or low contrast image can utilize a lower resolution, whereas an image with sharp edges and fine detail will show the effects of low resolution much more predominantly. Does the image have elements with a high degree of detail such as hair or fabric? Fine details require higher resolutions to render properly.



We recommend using the resolution settings in the table on page 10 as a starting point. The three factors that affect image resolution (Viewing Distance, Viewing Conditions, & Type of Image) can affect each project differently.

# Large Format Printing

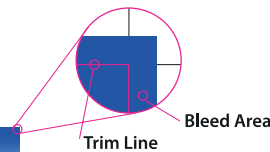
## Scaling Files

Not all documents can be created at the final output size. This is due to the limitations of the artboard size in the Adobe Creative Suite. When the final output size is larger than the artboard size prepare the file at a scale of 50%, 25%, or 10%. Please label the scaling factor used in the slug area of the document. This will allow for easy calculation of sufficient image resolution and bleed allowances. See examples below.

### Examples for 50% Scale

Printed size 24ft X 12ft (288" x 144")

Document set-up 12ft x 6ft (144" x 72")



#### Image Resolution:

Document size = 300 PPI

Printed size = 150 PPI

#### Bleed Amount:

Document size = 1"

Printed size = 2"

### Examples for 25% Scale

Printed size 24ft X 12ft (288" x 144")

Document set-up 6ft x 3ft (72" x 36")



#### Image Resolution:

Document size = 600 PPI

Printed size = 150 PPI

#### Bleed Amount:

Document size = 0.5"

Printed size = 2"

# Large Format Printing

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## Image Handling

Placed RGB images will be converted to CMYK formatted images in the PDF export process. It is advisable that designers look at the CMYK formatted images in the PDF before you send the files to the printer.

Our colour managed workflow is based on North American industry standards.

Please ensure that the placed images contain enough resolution. It is advisable to print images with a minimum of 120 ppi (pixels per inch) at final size. Please see the table on page 10 for product-specific recommendations.

If your wide format project is colour critical, please ask your Sales Representative to include a printed proof in the estimate. A colour critical section of the job or a proof at reduced size can be provided for evaluation of image quality and colour.

## Fonts

All fonts should be typeset in Illustrator/InDesign, not Photoshop.

Important: For wide format printing projects it is recommended to outline all fonts. This will allow for more stable file processing.



InDesign



Illustrator

If fonts are being coloured black, the file should be set up to 100% black only. Do not apply a stroke to fonts.



# Large Format Printing

## PANTONE (Spot) Colours

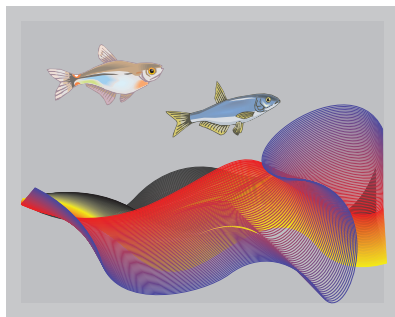
PANTONE colours will be converted to CMYK for digital large format printing as the printing process will not accommodate PANTONE spot colours. PANTONE spot colours can be utilized on our screen presses. Hemlock Display requires the files be built with PANTONE spot colours when a project demands a close colour match. If a PANTONE spot colour match is important for your large format printing project, please ask your Sales Representative for an estimate that includes a printed test or proof of the file before printing the live project.

## White Ink Set-Up

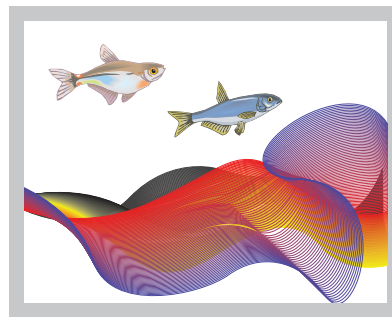
The white ink channel in digital large format printing serves as a semi-opaque option for CMYK printing on transparent substrates. Two scenarios are possible:

**Spot White:** Only certain parts of the printed area are to be blocked out with white ink (non-transparent areas). In this case a spot colour channel must be set-up in the document and named **Spot1**. The ink density is set to 100%. All spot white areas must be **Set to Overprint** prior to submitting files for output.

**Flood White:** The entire print area is to be blocked out with white ink. In this case no special file preparation is required but a **Flood White** must be specified/requested in the print order.



Example of spot white on clear acrylic



Example of flood white on clear acrylic.

# Large Format Printing

## Document Set-Up for Projects with Dielines or Contour Cut lines

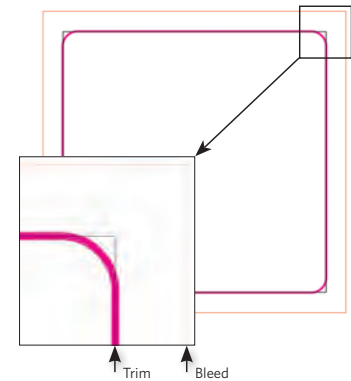
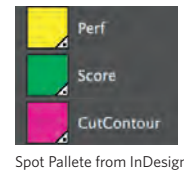
When your project will be diecut, make the trim size of your document the same dimensions as the finished size after diecutting. When creating the dieline, create a swatch named **CutContour** that is defined as a spot colour. Give the dieline a stroke width of 1 point. The center of the stroke is the position of the cut, so the dieline stroke should center on the trim size of the document when positioning the dieline artwork. Dieline areas must be **Set to Overprint** prior to submitting files for output.

If scores are required, then a separate **Score** spot color needs to be defined.

### Dieline Size = Trim Size.

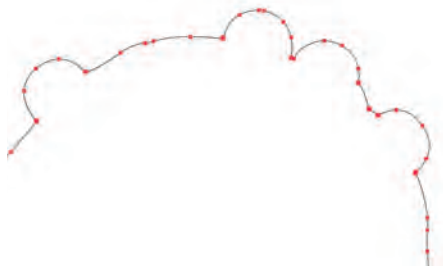
Be sure to set bleed to at least .25" on all sizes.

solid magenta		= cut
solid green		= score
solid yellow		= perforations



Use as few nodes as possible when creating complex dielines.

### BEFORE



too many nodes

### AFTER



removing extra nodes

# Large Format Printing

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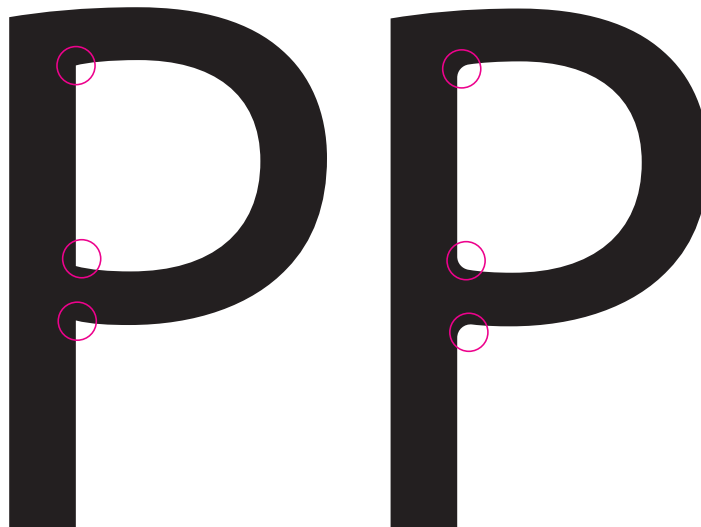
## Cut Lettering

When creating files for cut lettering, the cut path must be a vector (no .png or image files). Set small text no less than 30pt. Text set smaller than 30pt will not reproduce well. Please contact your Sales Representative to discuss your project if you have concerns.

## 3D Lettering

Please note that small inside corners on 3D letters will become rounded to a 4mm radius once cut on a router table to accommodate the diameter of the milling bit.

## Example of 3D Lettering



Original letter

Letter after being cut on router table

# Large Format Printing

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## Gradients

Gradients are smooth blends from one colour to another. They can add depth and visual interest to a design. Producing smooth gradients without noticeable abrupt changes in colour (sometimes referred to as 'stepping' or 'banding') can sometimes be difficult, depending on several factors:

- The amount of colour shift vs. the length of the gradient
- The output device and media type
- Other elements in the file (transparency, blending, etc.)
- For producing gradients in Illustrator, see Adobe's help document 'Printing gradients, meshes, and color blends'. In general, gradients created in Photoshop are more reliable, but can increase your file sizes significantly.

# Large Format Printing

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## Screen Printing

Process colour screen printing has its own unique challenges. File preparation for screen printing differs slightly than Large Format digital printing. Follow these tips below for the best results:

- Type should be larger than 7pt (9pt for reverse type and type with fine serifs)
- Make sure grey and black elements are colours with Black only (C:0 M:0 Y:0 K:100)
- When creating areas of flat solid colour, ensure one of the colour channels set at either 100% or 0% (eg. red: C:0 M:100 Y:100 K:0)
- Areas of colour made up of screens of all 4 colours (CMYK) could show a moire pattern and should be avoided.

## Black Versus Rich Black

When designing a screen print project with process colours (CMYK) which have large areas of black, such as a solid black background or large black type, it is often desirable to use a CMY boost under the black. A boosted Black appears blacker. Boosting Black allows the flexibility to achieve the desired colour density on the printing press. Hemlock Display's preferred Rich Black is 15% Cyan, 15% Magenta, 15% Yellow, 100% Black.

- Type smaller than 18pt and rules that are thinner than 3pt should not be boosted, but instead be 100% black only.

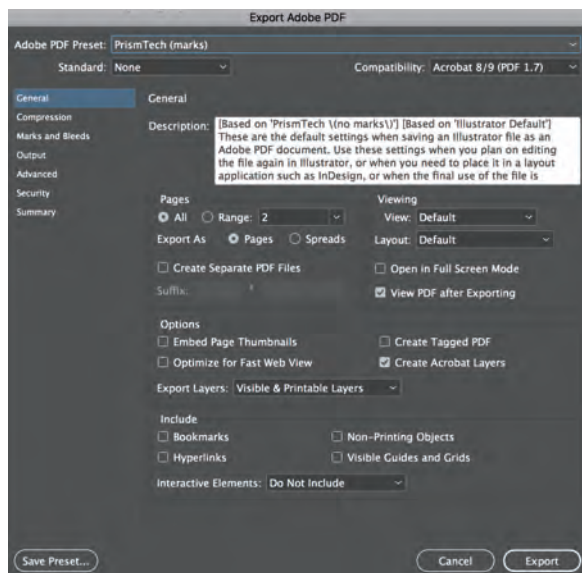
# Large Format Printing

## File Format

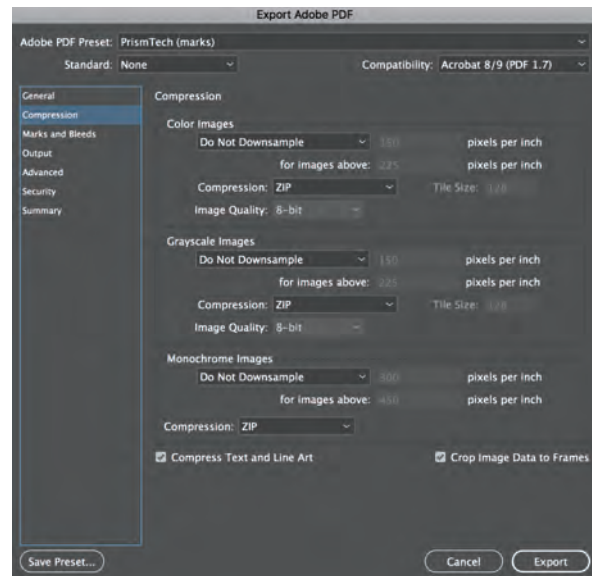
A large format print estimate is based on submitting print-ready PDF to Hemlock Display's specifications. Please refer to the next paragraph.

## Exporting Print-Ready PDF Documents for Large Format Printing

In the pull-down menu, choose **File > Export**, a window will ask where to save the PDF file. Save the file to the appropriate location. An "Export Adobe PDF" window will open with options to generate a PDF with optimal print compliance. The screen shots below illustrate the settings required for large format printing. An Adobe PDF preset can be requested.



Select **Acrobat 8/9 (PDF 1.7)** under **Compatibility**. This setting allows for transparency



Set your image downsampling to **Do Not Downsample** and compression to **ZIP**.

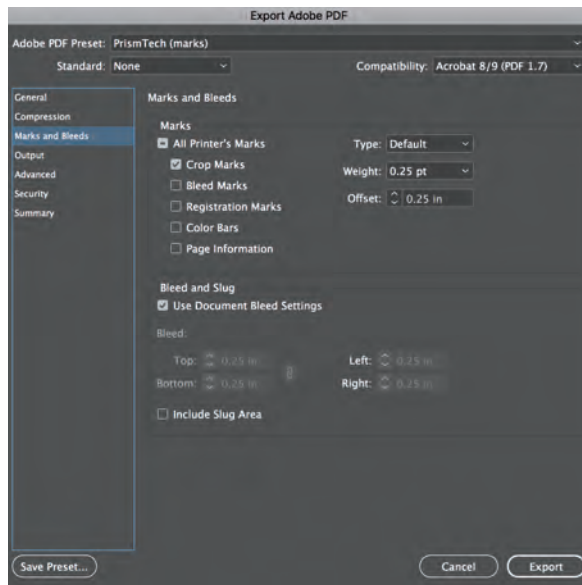
- The pdf export settings are available for download at: [pdf.hemlock.com](http://pdf.hemlock.com)

# Large Format Printing

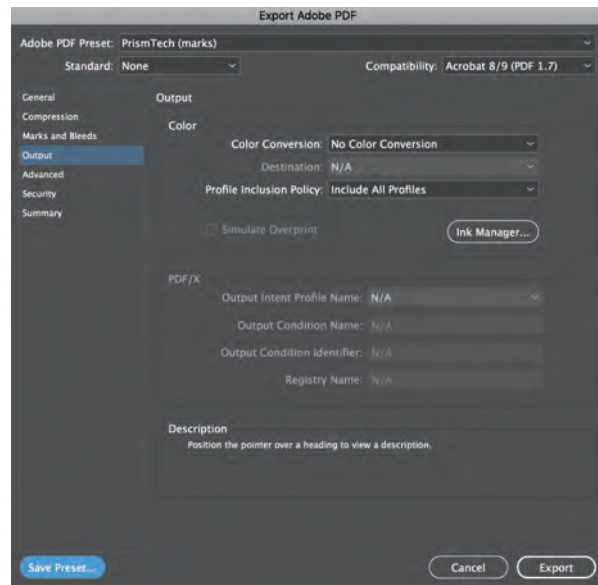
## Exporting Print-Ready PDF Documents for Large Format Printing (cont'd)

Prior to sending the PDF to Hemlock Display, it is advised to view the exported PDF in Acrobat with the Output Preview tool on. This will provide you with a final look at your PDF to confirm:

- ✓ Correct amount of Bleed
- ✓ Resolution of the file
- ✓ Trim marks must be outside Bleed Margins
- ✓ No tags or registration marks inside the bleed margins
- ✓ Colour mode is CMYK only
- ✓ Critical colours are Pantone swatches from Pantone Solid Coated swatch book
- ✓ Dieline or cutlines are set to CutContour
- ✓ White ink is set to Spot1



Set your Marks and Bleeds to 0.25"



Save Preset for future use.

With the correct PDF Export Settings, each of the critical prepress settings will be correct and your files will process properly.

# Large Format Printing

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## **Packaging Files**

Both InDesign and Illustrator features a Package function (File > Package) that will gather your file along with all required links and fonts.

If any changes need to be made at Hemlock Display, using the Package function will give our prepress operators the flexibility to make changes and output the file in a timely matter avoiding production delays. Transparency issues are a common problem at the RIP processing stage (just before printing). Having the native files will allow us to quickly fix the problem, instead of waiting for new files.

## **Supported file types**

- Adobe InDesign CS
- Adobe Illustrator CS
- Adobe Photoshop CS
- Print-ready PDF files\*

\*Please note that we cannot edit all PDF files. If your job requires screen printing, die-cutting or editing, we may require source files.



