



Delga

DESIGN GUIDELINES

Your comprehensive guide to
working with Delga Press

CONTENTS

Order Sequence	2
CAD and Artwork Processes	3
Quick-Check List and File Format	4
Design Advice	5
Working with CAD Templates	6
Trim Box Set up	7
Special Finishes	8
Special Finish Artwork Set up	9
White Ink Set up	10
Summary	11
Glossary	12

Version 1
October 2019

Introduction

About Delga Press

As one of the UK's leading packaging printers, Delga Press Limited provide innovative, bespoke solutions to a variety of industries across the country and in Europe. Established for over 50 years, our expertise include carton design and print solutions using the latest digital and litho print technology all in-house.



About This Guide

The purpose of this document is to enable those who are new to packaging to create and supply print-ready artwork first-time to avoid delays and potential costs for re-supplies. We have included a brief overview of our workflow and the steps necessary to design the perfect packaging for your product.

Please take the time to read and understand the appropriate sections that apply to your order.

Keep Informed

For the latest version of this guide and other updates from Delga, please register at guidelines@delga.co.uk

Enquiry to Order Sequence

At Delga Press, we design the structure of your carton, print and finish all in-house. It is essential that we understand the purpose and use of your carton to meet your expectation, and typically this is achieved following the below sequence of steps:

- 1 Specify** Agree dimensions, style, materials, colours, finishes and volume.
- 2 Estimate** Ensure the intended specification is within your budget.
- 3 Sample** Carton is designed and a white sample is sent you for approval.
- 4 Order** Confirm the order and we shall send you the template drawing.
- 5 Artwork** Submit your print-ready PDF for proofing.
- 6 Produce** Print manufacturing is scheduled*

*Production schedules will vary for each product/order and are subject to availability of materials. If you have a target date in mind, please include the details at the initial stages.

Carton Design Process (CAD)

Delga's in-house team of skilled design engineers are the architects of your order and provide the foundation of the entire carton manufacturing process. Artwork cannot be finalised until the template drawing (die-cutting guide) is complete.

Inputs

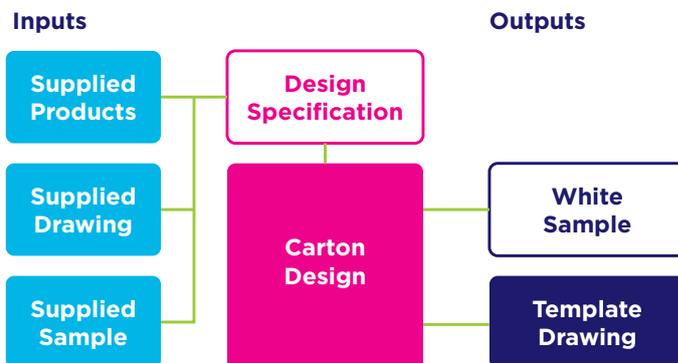
Not all clients require us to design their carton, but for those that do, best practice is to supply the contents or products that the carton will hold. As well as ensuring the end result will be fit-for-purpose, we may be able to advise on alternative styles depending on how the packing will be used.

If you have an existing design, we require the template drawing along with the specification. If you have had the product printed before, it is recommended to send us a previous example along with the template drawing.

Design Specification

This will include the dimensions, material to be used as well as the purpose of the carton. When considering a design, it is important that our team knows what happens to the product after it has been packed, as well as how it is packed.

For example, is the product packed into the carton by machine and/or will it be sent directly to a consumer through the post?



Outputs

We will produce a white sample representation of the final product for every new design - including those that you may have previously ordered elsewhere. The sample must be approved before drawings are released and production commences.

When you have placed your order, you can use our drawing to set your artwork design. See [Working with Templates](#) in this guide for more information.

Artwork Process

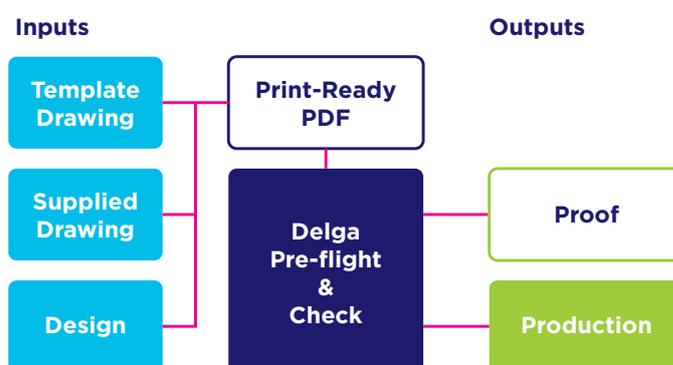
For new cartons, you will require our template drawing to finalise your print-ready PDF. This guide contains information on how to achieve the correct result first time and the diagram below is a brief outline of the steps undertaken at Delga Press when your PDF is received.

Inputs

Your artwork should be set to the size of the template drawing. The template is the key to how your carton will be produced and therefore understanding of the layout is crucial at this stage (as the drawing is flat it can often be disorientating). We recommend creating a 3D mock-up so you can understand the final position of each panel, and use your approved white sample as reference. For most products, we can provide a printed, CAD-cut prototype as part of the proofing process.

PDFs

This guide will help create your print-ready PDF, which upon submission, we shall check and verify against your order. Note: these checks are automated and does not involve proof-reading or evaluation of orientation, live matter or design content. Ensuring colour settings, overprint, margin infringements and overall appearance is the responsibility of the designer/client.



Outputs

We include a PDF proofing process as standard for all customers and shows you the artwork after we have processed it through our system. We can also send hard-copy proofs, such as contract colour proofs or printed prototypes for an additional cost.

Quick Check

Before sending us your artwork, have you:

- Proof-read your document?
- Checked colours are CMYK (not RGB)?
- Checked your images are minimum 300dpi?
- Checked that the template is overprinting?
- Added 3mm bleed allowance?
- Embedded your fonts?
- Saved your artwork as a print-ready PDF?

Common errors

- ✗ Trim-box not set
- ✗ Images not 300dpi or above
- ✗ Fonts not embedded
- ✗ No bleed
- ✗ Carton/Packaging not supplied in template
- ✗ Template not set to correct colour
- ✗ Template not set to overprint
- ✗ Print/Varnish free areas not specified
- ✗ Total Area Coverage (TAC) above 320%

File Format and Colour Settings

File format must be print-ready PDF (native files such as Illustrator, Photoshop, InDesign may incur conversion costs). Colour profiles can be useful to help you understand how your design will look. We recommend your document colour settings are Euroscale Coated V2, or Coated Fogra 39.

Colour mode must be CMYK or set as spot colour for Pantone colour work. RGB images must be converted prior to PDF submission. Spot colours not used must be converted to CMYK or removed,

Your final print-ready PDF file should include crop marks, bleed areas, trim boxes and will also govern the quality of your images.

PDF Specification

Format PDF/X-1a

Colour: CMYK (or Pantone colours as per ordered)

Images above 300dpi

Fonts embedded

Trim box specified

Overprint settings checked

Template included (see Working with Templates)

Vector and Raster Images

Prior to creating your PDF, it may be worth considering how you ensure your images will be at optimum quality. Many images are created using a series of dots/pixels which are called raster images - CMYK images should be set to at least 300 dots per inch (dpi). They do not scale up in size without a loss of quality, therefore we do not recommend using images above 100% of their size.

When saving raster images (usually Photoshop), we recommend as little compression as possible such as maximum quality JPEG or TIFF formats.

Vector images are different, as they are shapes and paths that can be mathematically scaled within the software. Typically, text, logos, borders etc are all vector format, and can be infinitely scaled without loss of quality.

Helpful Resources

www.ppa.co.uk

The site offers settings for the most common design applications as well as brief explanations of how to co-ordinate your workflow. Look for the Pass4Press or Pic4Press links for more detailed help at www.ppa.co.uk/resources/resources/ppa-production-resources.

www.gwg.org

There are many expert and up-to-date sources of information available online such as the Ghent Workgroup www.gwg.org which is perhaps the best source of advice available in achieving a correct print-ready file.

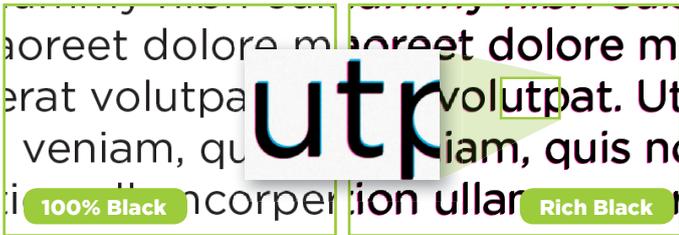
Design Advice

The advice in this section will help you get the best from your printed product. Your design is unique, but the following tips are often overlooked.

Black Ink

Often, for larger areas, 'rich' blacks are used with a combination of all four CMYK colours. This creates a much deeper colour, but should not be used for text, barcodes or small objects.

The image below shows how using rich black can cause a fuzzy, sometimes blurred result.

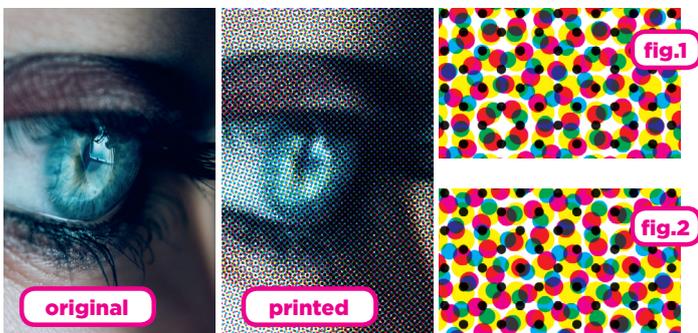


If your design contains large areas of black, it could result in a 'washed-out' effect. We recommend making the colour 50% Cyan and 100% Black to strengthen it. You should not create solid black areas made from all four CMYK colours (known as 400% or registration black), as it results in too much ink when printed. **Note:** our limit is 320% Total Area Coverage (TAC) - above this your files may be rejected.

Neutral Colours

Large areas, or solid backgrounds that are made up of more than two process colours can sometimes change due to print machine tolerances. This is due to the printing process which consists of small dots intersecting and overlapping to create coloured shapes and images.

Fig.1 shows a magnified pattern formed by the four colour process print dots. Notice there are some white areas equal to the size of the pink (magenta) dots, which helps to achieve a neutral colour.



The printing process has a degree of movement between the colours which can change the dot pattern. Fig.2 shows how a slight amount of movement to the magenta ink can affect the white areas. We therefore recommend that background colours are made up of two or three CMYK colours, which reduces the effect of print register tolerances.

Mono Images

For mono (black and white) images, we recommend that they are set to black only (greyscale). Due to the movement of the printed dot pattern (see Neutral Colours), mono images consisting of four process colours (CMYK) can sometimes appear with a green or pink colour cast, and may vary throughout the order.

Text Size and Rule Weights

If your design uses lines, rules or borders, they should be set to a minimum of 0.5pt and ideally be made from a maximum of two or three CMYK colours.

Regular or bold typefaces should be set as a minimum size of 6pt if printed in colour, and 5pt if 100% black.

Similarly, if you are using a light or fine typeface, it should not be below 10pt if in colour, or 8pt if 100% black.

Reverse-out text should not be set in light or fine typefaces below 24pt, depending upon the background colour. Regular weight typefaces are likely to be affected by print register tolerances, so for reverse-out text should be as bold as possible, especially when the background is more than two colours.

What is Bleed?

Bleed refers to the area of printed board that is trimmed when making your finished product. Artwork must include bleed if your design extends to the edge of the printed product.

If bleed is not allowed for, you are likely to see small white spaces at the edges of your finished product. We include a bleed guide within our template drawings, and a visual guide on page 11 of this document.

What is Overprint and Knockout?

Within your design software, you will find settings such as 'overprint' or 'knockout' - typically under **Attributes**. This setting determines how an object interacts with another and how it appears when printed.



The above image show how three shapes appear when set to knockout or overprint - note the white shape has disappeared. As a rule, white areas should knockout and black areas should overprint.

Please also see guidance on special finishes and white ink for more overprint advice.

Working with Templates

Print-ready artwork for die-cut products must include a template for cutting and creasing. The guidance in this section will help you to work with drawings supplied by Delga, and how to include them in your final print-ready PDF.

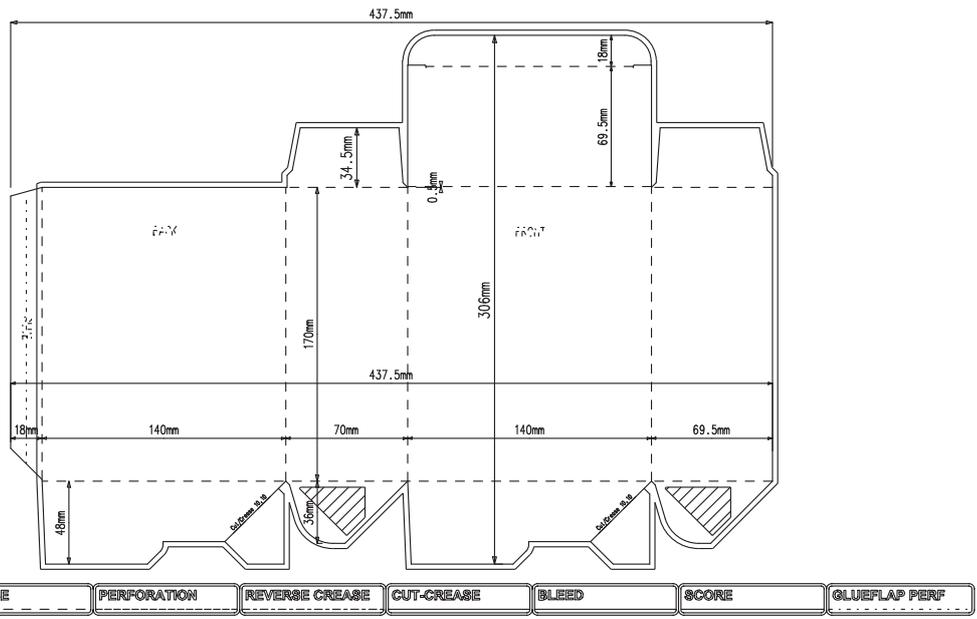
If Delga have designed your product a PDF file and/or an Adobe Illustrator (.ai) file will be sent to you when you have placed your order. The file contains the drawing's dimensions, crease/perforation lines, as well as bleed and print-free areas.

Before placing over your artwork, please ensure the correct template reference and version match the sample you have approved. When your artwork is received we shall use the references to ensure it relates to your order.

CUSTOMER:
CONTACT:
TITLE:
CAD REF:
VERSION:
QUOTE REF:
DATE:
DESCRIPTION:

NOTE: You are **NOT** permitted to amend the drawing. Changes must be submitted to Delga for re-sampling and a new drawing and CAD REF will be supplied.

CAD NOTES:
PLEASE NOTE THIS TEMPLATE HAS BEEN CREATED USING SPECIFIC CO-ORDINATES REQUIRED FOR COMPUTER TO PLATE IMAGING AND IS NOT TO BE ALTERED, MOVED OR THE DOCUMENT SIZE CHANGED. ALL DIMENSIONS ARE IN MILLIMETRES. BLEED ALLOWANCE OF 3MM ON TRIMMED EDGES. ALSO, TEXT, BORDERS AND LOGOS SHOULD NOT BE CLOSER THAN 3MM FROM DIE-LINES.



Using the Template File

To use the file effectively, it should remain as a vector file as it will need to be converted to a spot colour and set to overprint. Once complete it can be imported into your InDesign document or used as a layer within Illustrator.

To do this we recommend opening the PDF or .ai from within Illustrator - DO NOT place into the document as you will not be able to edit the objects.

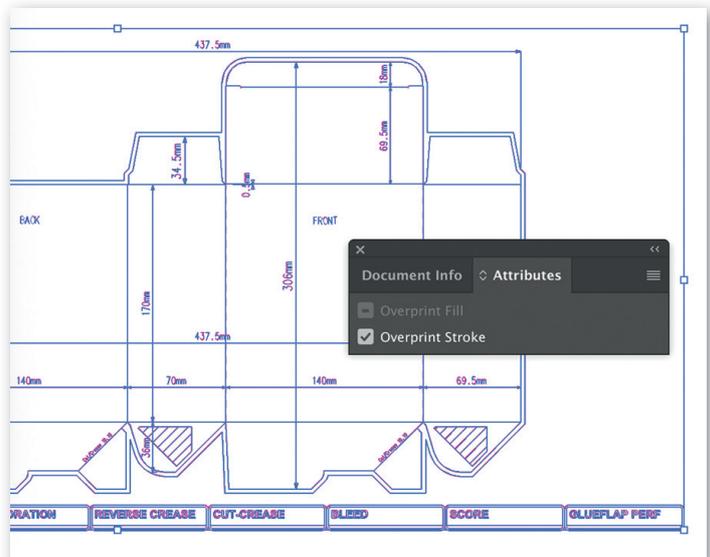
Step 1 Create spot colour swatch to differentiate the drawing when finalising your design. In this example, we have used a bright pink, and called it 'CUTTER'.



A spot colour is necessary as our workflow will separate the drawing from the artwork that is to print onto your product.

Step 2 Many of the objects will appear as an editable black stroke. To change the colour, simply select any one of the black lines, then go to Illustrator's helpful 'Select' menu, go to **Same**, and the **Stroke** colour. Now ALL black stroke elements are selected. **Note:** you may wish to group them together to easily reselect them.

Step 3 Now you can change the colour to the new CUTTER swatch. You must then ensure the objects are set to overprint in the **Attributes** window, otherwise the drawing will leave white areas across your artwork.



Once complete, either move the entire template to a new **Layer** within Illustrator or you may wish to import as a vector image into other applications.

How to set the Trim Box

One of the most common issues when processing artwork files is incorrect or unspecified trim boxes, and if your artboard or document size matches to flat size of the carton it is automatically set when creating your print-ready PDF. If your design is set within a larger area, you MUST add appropriate trim marks or crop marks for our software to detect the printed items.

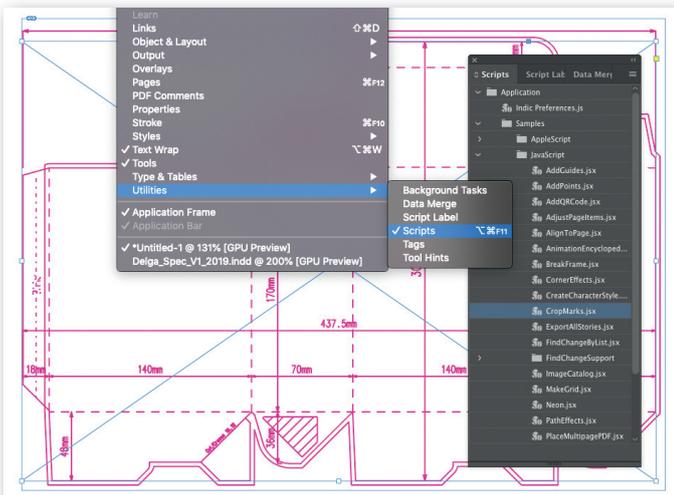
Adding Crop Marks in Adobe InDesign

Adding Crop Marks in InDesign works in a similar way to Illustrator but involves a few more steps.

Step 1 Draw an object with no fill or stroke to the size of the flat carton - for our example it is 437.5mm wide and 306mm high.

Step 2 Position the object to the edges of the flat carton - take care not to position it to the bleed area.

Step 3 You will need a Script to produce the crop marks, in the **Window** menu **Utilities** and select the **Scripts** window. With the object selected, find the **Crop Marks** script and double-click to create them.

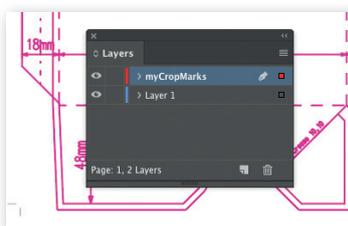
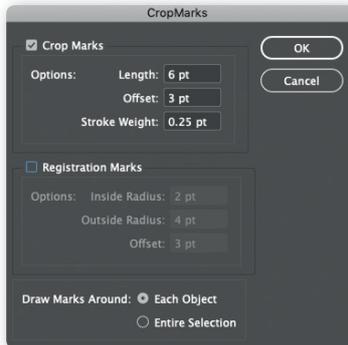


Step 4: When prompted, we recommend you do not change the default Crop Marks options, however you should uncheck the Registration Marks option.

Click OK.

You will now have eight trim marks surrounding the corners of your carton.

Note: InDesign has now created rules for each crop mark, and also built a new layer for them called 'myCropMarks'.



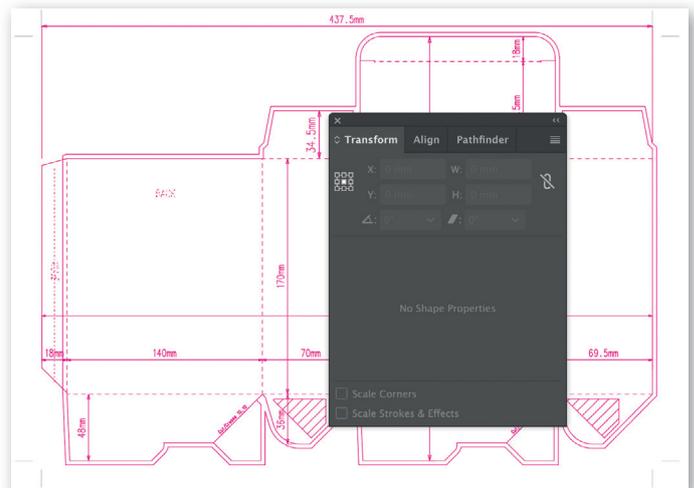
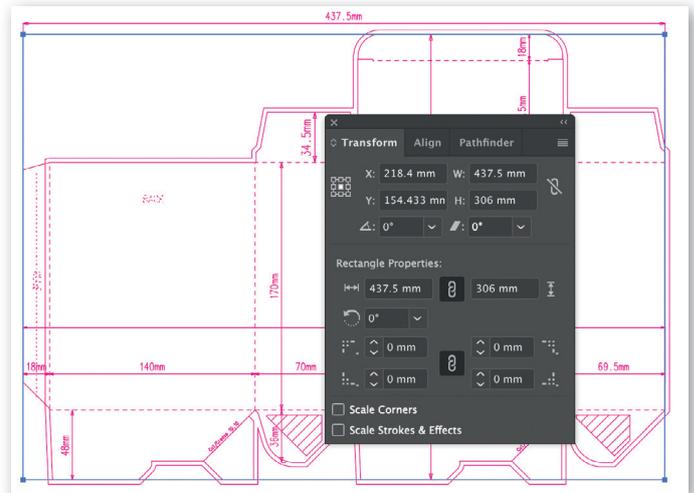
Adding Trim Marks in Adobe Illustrator

Step 1 Draw an object with no fill or stroke to the size of the flat carton - for our example it is 437.5mm wide and 306mm high.

Step 2 Position the object to the edges of the flat carton - take care not to position it to the bleed area.

Step 3 With the object selected, go to the **Object** menu and select **Create Trim Marks**.

You will now have eight trim marks surrounding the corners of your carton.



TIP: For those using layers (as described elsewhere in this guide) we recommend you move the crop marks or trim marks to the same layer as the template. Note: the object used to create them still remains, but can be deleted if you wish.

Special Finishes

Printed packaging can benefit from additional processes such as foiling, spot varnishes, embossing and debossing. These common special finishes are great ways to accentuate aspects of the print, and here are some tips that should be considered when creating your artwork.

Foiling

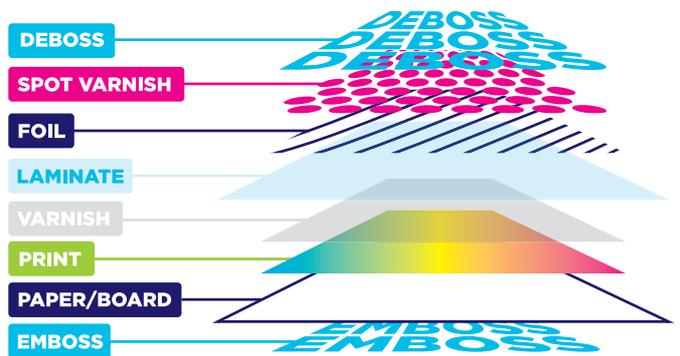
Hot or cold foil blocking is the process of 'stamping' foil onto the surface of the print. Though there are many colours of foils available, they are usually metallic and add a degree of luxury to the design. To stamp the foil, a metal block is cast from your artwork, but there are limitations to what can be achieved.

Intricate details such as small type or raster images cannot be foiled due to the stamping process. For best results, send your design to us for review before you create your final print-ready PDF.

Embossing is the process of pressing an area into the reverse side of the substrate creating a '3D' image on the front side. Debossing is pressed into the surface, making the image appear to be on lower level.

Embossing and Debossing

As with foil, a cast is made of the graphic and though there are limitations, they vary depending on the type and thickness of material. Small text and other fine details will not be visible, as the thickness of the material prevents the pressing of the die. We recommend that the details embossed are at least three times as thick as the substrate, but considerably more for rigid stocks.



This graphic illustrates how the print and special finishes are applied to the material. It may be useful to emulate these layers when preparing your artwork.

Spot Varnishes

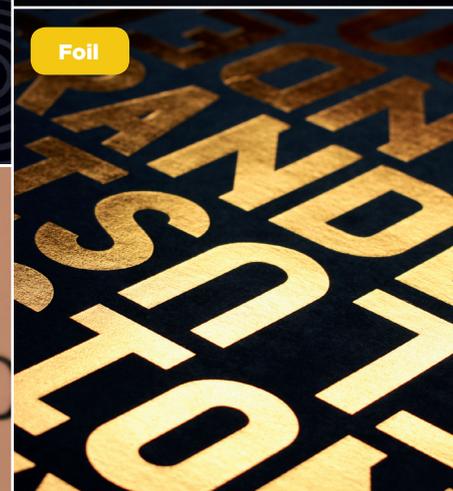
As well as 'overall' varnishes, which add a sheen or light coating to the printed surface, we can also apply a higher density varnish to highlight areas of your design.

The most common is Spot Gloss UV varnish, which works well in contrast with matt or solid backgrounds.

Lamination

The printers term for applying a layer of plastic film to the surface of the sheet is laminating. The films are most commonly gloss or matt, and are applied after printing and create a waterproof surface.

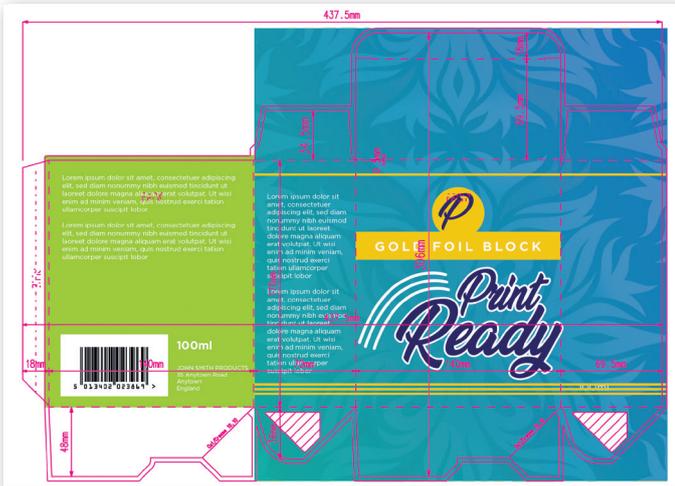
Many more laminations are available such as soft-touch, textured, holographic and anti-scuff, which is a recommended alternative to matt for high-end products.



How to supply artwork for special finishes

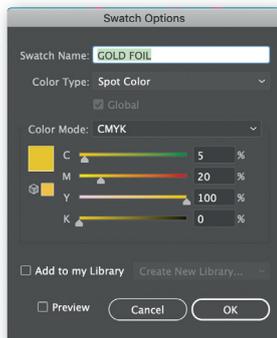
Your print-ready PDF must separate the objects that require the special finish. In most cases, they will be a vector image and **MUST** be set to overprint as an additional spot colour, see our below guide on how to achieve this within your artwork file.

To start, let's describe what we're trying to achieve. This design is to be printed four colour process (CMYK), is gold foiled, spot UVed and embossed.



In this example, the template drawing has been changed as described in the section 'Working with Templates' of this guide. We now want to make the foiling area a layer of its own. **Note: we are using Adobe Illustrator.**

Step 1 The foil artwork is set as a gold spot colour (5th colour) and set to overprint. We have called it 'GOLD FOIL'.



Step 2 Create a layer for the foil, separate from the rest of the design. While this is not essential, it can help you view the design and ensure the objects are set correctly.



Step 3 The foil objects must now be set to overprint so that it does not affect the rest of the design.

Overprinting with foil is standard as they are opaque. Your design may require an exception to allow other elements to knockout the foil, however it is not recommended due to register tolerances.

TIP: Use vector artwork where possible, not bitmap files. **Gradients, tints, and rasterized images cannot be used for special finishes.** Fine details such as small type, reverse fine images should be avoided due to registration tolerances.

Now that the foil objects have been separated, you are able to view the printed elements by turning off the layer. Notice how the items beneath the foil are simple shapes, only part of which will be revealed by the foil.



The foil elements are now complete and are ready to supply for print. Once approved, we shall use the foil colour to create the block for production.



Repeat

These steps should be repeated for embossing, debossing and spot UV. Using different colours for each finish is helpful, though it may not look like the final result, it will help you to check the objects and layers are correct.



As with all artwork, we recommend checking your file with Overprint Preview - (go to View > Overprint Preview).



How to supply artwork with White Ink

If printing onto coloured or foiled board, white ink is an effective way to draw attention to areas of the design. Conventional designs rely on the substrate to remain white through the lack of ink. If the material is coloured, the print-ready file must include a white channel to print onto it.

TIP: white ink is often essential if printing photos and barcodes onto coloured or foiled board.

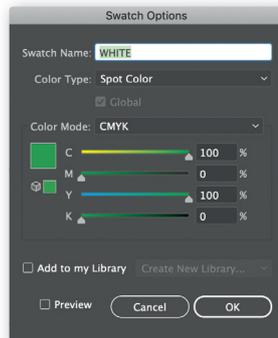
Implementing a White Ink Design

White-ink areas must be supplied in the print-ready PDF in a similar way to the spot-colours for special finishes previously described in this guide. The exception is that vector and raster image can be printed in white.

Note: overprint and knockout settings are crucial to the result so please check your overprint preview prior to creating your PDF.

For this walk-through, we shall use artwork created in Adobe Illustrator. This 'Crusher' carton prints four colour process (CMYK) and White onto a silver foil board. The gold areas are yellow hues printed directly onto the board, and other areas are either white ink, or have white ink UNDER the coloured areas,

Step 1 Create a new spot colour swatch called 'WHITE'. The actual colour can be white if you wish - here we have used a green for distinction on screen.



Step 2 For those using layers, we recommend creating a separate WHITE layer to aid this process.

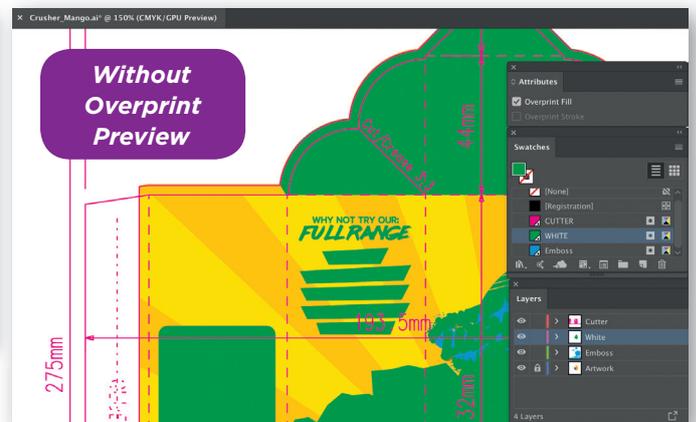


Step 3 Now simply change the objects that appear as white to the new colour swatch. **Note:** if these items are set to knockout in **Attributes**, they will appear white and will not underpin other inks.

If you need to underpin a white object, ensure it is set to overprint as in step 4.



Step 4 If white object is required to mask the coloured board and 'underpin' the CMYK print (such as a barcode), it will need to be set to overprint in the Attributes window.

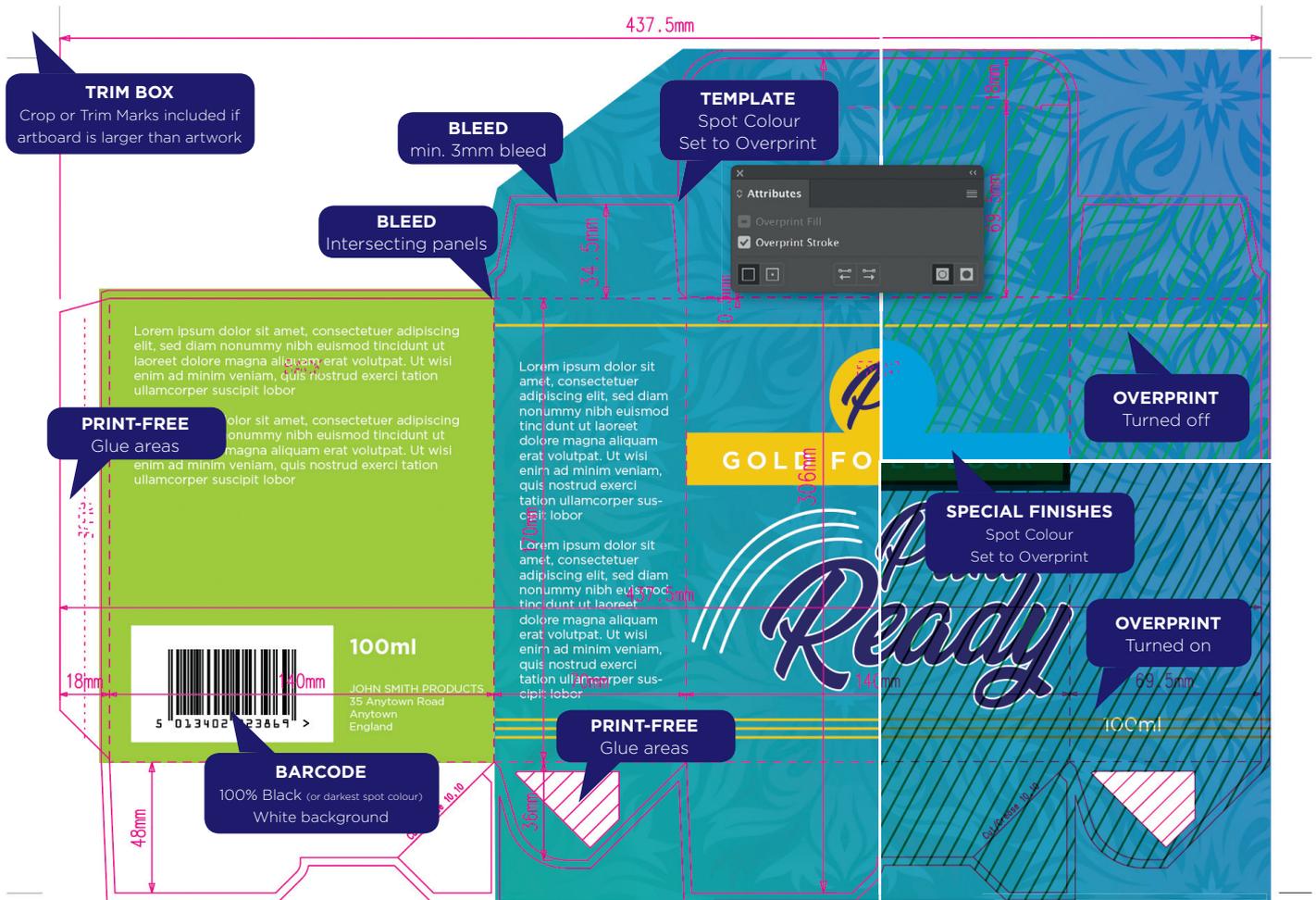


When complete, it's essential to check your settings with **Overprint Preview** turned on.



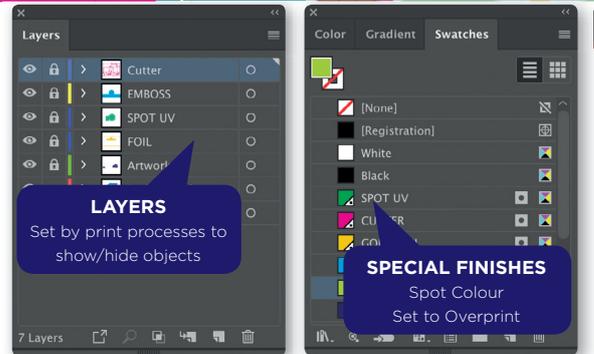
Artwork Guideline Summary

This summary page is useful for a final check before submitting your print-ready PDF.



Design Quick-Check

- Template** - set to spot-colour and overprint.
- Bleed** - 3mm min. and watch out for intersecting panels and flaps.
- Trim Box** - set crop/trim marks if the document or artboard is larger than finished size.
- Barcode** - ensure rich-black is NOT used, and include white ink if using coloured stock.
- Special Finishes** - use spot-colours for each process and set to overprint.
- Overprint** - check and check again!



Get Familiar: You can download this dummy artwork in Adobe Illustrator or InDesign for free from our website at delga.co.uk.

Glossary

Bleed - the area of print which is trimmed when producing the final product.

CAD - computer-aided-design. Used at Delga to describe their in-house structural engineers.

Carton - term used to describe ANY die-cut board substrate that is folded to achieve its final form.

CMYK - Cyan, Magenta, Yellow and Black inks used for four colour process printing. Cyan (blue), Magenta (pink/red), Yellow and Black (Key) are combined to make up colour artwork and images.

Crop marks (Trim marks) - rules/lines used to indicate the cutting edge of a printed sheet. Crop marks should NEVER appear in the live area of the artwork.

Deboss - to press the substrate with a tool to create a 3D shape that appears lower than the surface.

Die Cutting - to cut paper or board using a metal tool to form a shape or flat carton.

DPI - raster image resolution is measured in dots-per-inch. Minimum standard is 300dpi if the image is used at 100% size.

Emboss - to press the substrate with a tool to create a 3D shape that appears higher than the opposite surface.

FBB - folding box board. Usually white coated one side, and white or cream uncoated on the other,

Foil - a thin layer of metallic material applied to a part or all of the surface of the printed sheet.

Four colour process - colour printing using CMYK inks.

GC1 - industry term for white-backed board.

GC2 - industry term for cream-backed board.

Grain - the name given to the direction of the fibres that make up paper and board. Grain direction helps to determine a substrate's strength and its resistance to folding.

Gloss - white coated paper or board with a reflective finish.

GSM - unit of measurement for weight of material. One metre square of 500 grams-per-square-metre stock will weigh 500 grams,

Knockout - images/shape/text that do not allow another image/shape/text to affect its appearance.

Lamination - a thin plastic film applied under heat to the surface of a printed sheet. Lamination can be gloss, matt, soft-touch, textured and many other finishes.

Microns - unit of measurement for thickness of a material. 1000 microns = 1 millimetre.

Overprint - an image/shape/text that print using one or more colours on top of another image/shape/text, changing their appearance.

Pantone - a global colour library for used by the printing industry. Pantone Matching System (PMS) inks are often called spot or special colours as opposed to four colour (process) inks.

Raster Image - photos and images that are made up of pixels (typically Adobe Photoshop files). Raster images are limited by their pixels (unlike Vector graphics) and cannot be enlarged without loss of quality.

RGB - a Red, Green and Blue colour space used for screen displays (web, television, video and camera). RGB colour cannot be used in the printing industry.

RTE - Reverse Tuck-End describes a carton with two tuck-flaps each on opposite panels of the carton.

Substrate - generic term for paper or board.

Same-panel Tuck - describes a carton with two tuck-flaps each on the same panel.

Silk - white coated paper or board with a non-reflective (matt) finish.

Spot UV - a varnish able to be applied to selected areas of a printed surface, derived from the artwork.

Stock - the paper or board (substrate) to be printed upon.

Template - die-cutting guides or keyline drawing that indicate the size and cutting positions of a carton.

TAC - Total Area Coverage. The composite amount of ink in an area when printing in four-colour-process. Standard printing processes are limited to a maximum TAC value of 320%.

Varnish - a clear ink-like liquid (coating), applied when using coated substrates to the printed surface to protect or add an even finish. Sometimes called **Aqueous** coating or **Seal**.

Vector Image - computer-generated images, shapes and text that are able to be enlarged without any loss of quality. Vector graphics contain plotted paths to create the shape enabling the scaling to be calculated mathematically within the software.

WBB - white-backed board is a folding box board with a white uncoated reverse side.