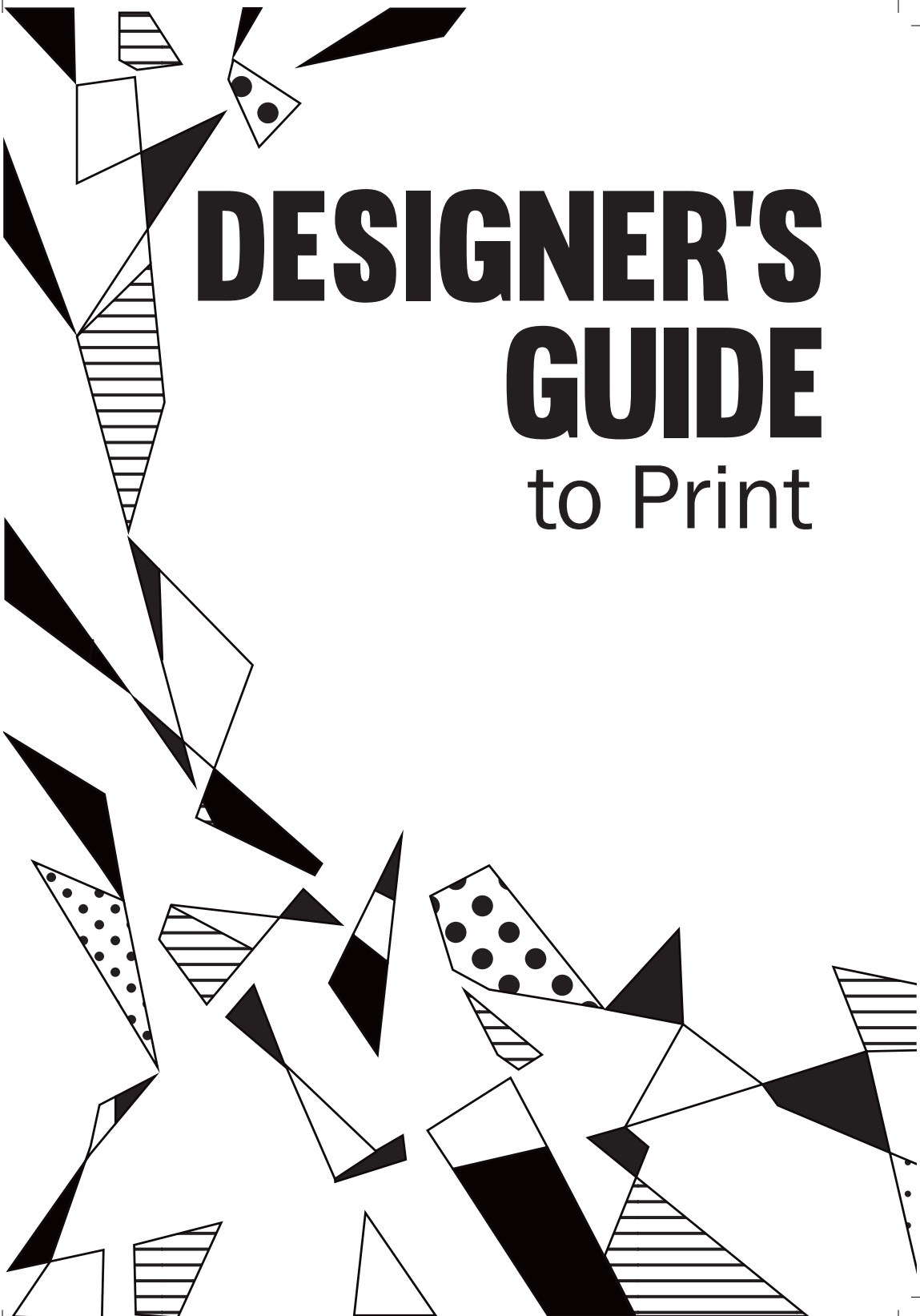


DESIGNER'S GUIDE to Print

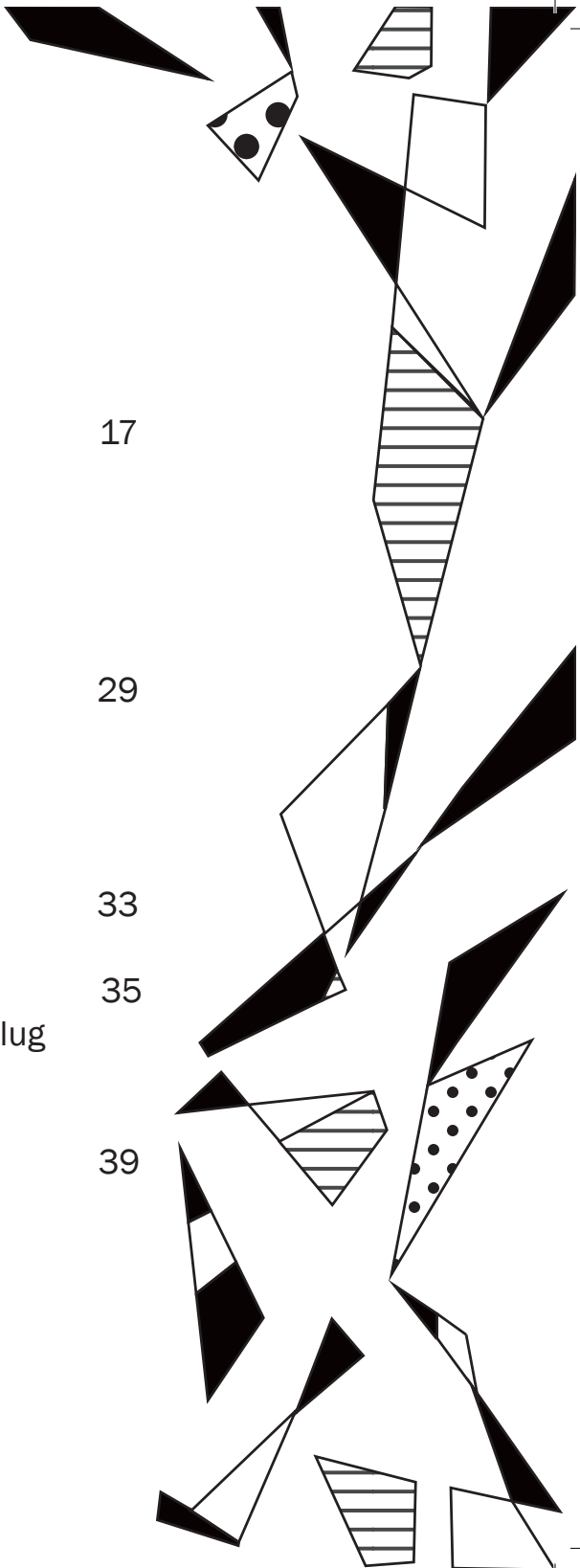
Cover is 270gsm Splendorgel

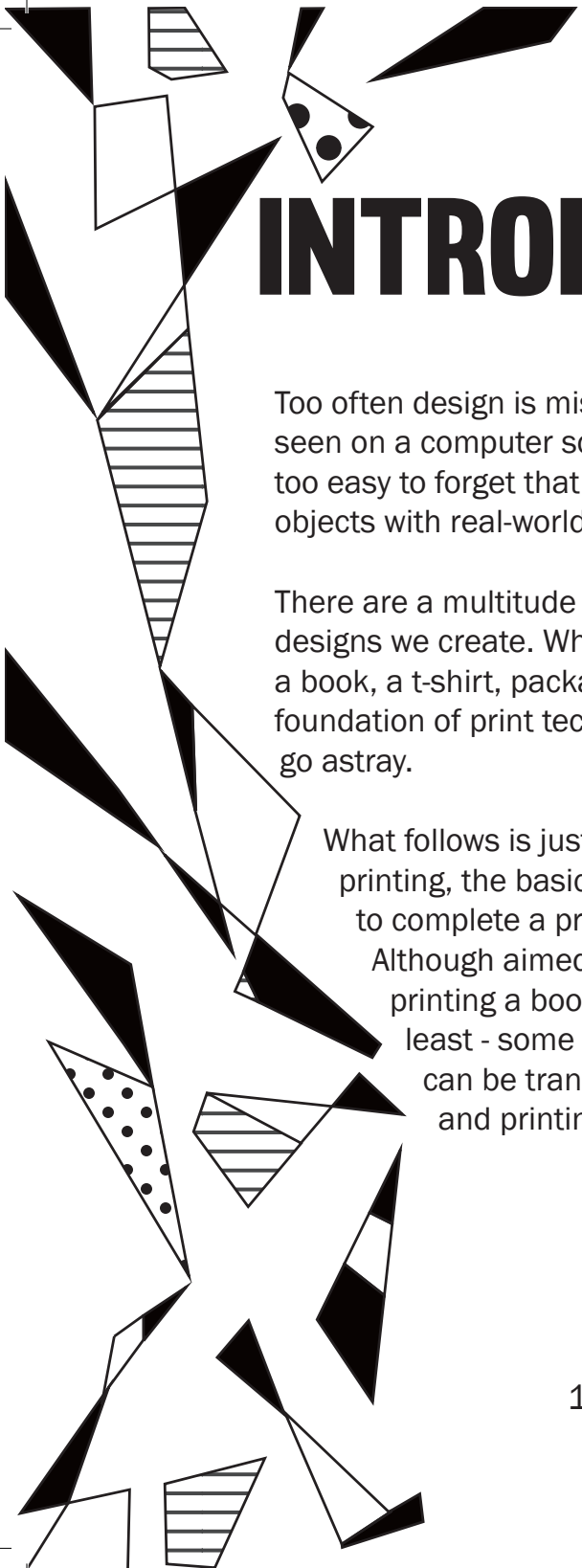
Briar Dunnet

"Design is not for philosophy it's for life"

- Issey Miyake

CONTENTS





INTRODUCTION

Too often design is mistaken for what can be seen on a computer screen. As designers, it is too easy to forget that we are creating real-world objects with real-world meaning.

There are a multitude of applications for the designs we create. Whether you intend to print a book, a t-shirt, packaging, or labels, a basic foundation of print techniques probably wouldn't go astray.

What follows is just that - a foundation for printing, the basic knowledge necessary to complete a print job with relative ease. Although aimed at those interested in printing a book - or on paper at the very least - some techniques and pointers can be translated to many scenarios and printing situations.


PRINT
METHODS

DIGITAL

Every impression can be different in digital printing as opposed to traditional methods when several copies are produced with the same set of plates. The ink or toner forms a layer on the surface of the paper, rather than being absorbed into the paper. It is usually less wasteful in terms of paper setup and chemicals. It can be expensive if printing a lot of something[13].

Wide format: up to 914mm wide rolls – such as those used in design establishments and drafting.

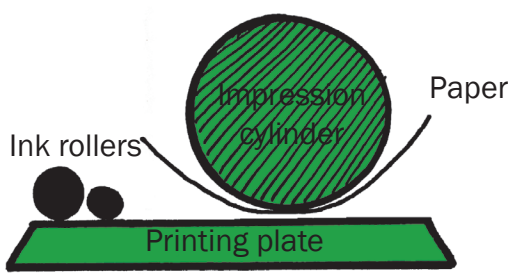
Smaller print jobs are referred to as small format.

Technologies:

- Inkjet: ink is sprayed onto the paper
- Laser: polymer with required pigment of image is melted and applied directly to paper.
- Heat transfer: like receipts where heat is applied to special paper and image is made from black.
- Dot-matrix: makes complex patterns of dots with a multitude of printing studs[7].

FLEXOGRAPHY

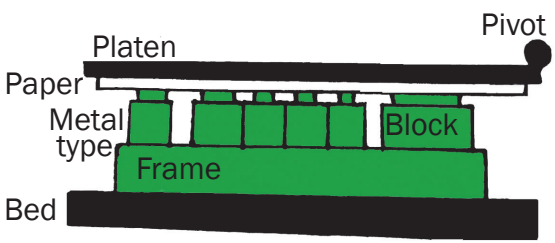
Flexography is a method of printing mainly used for packaging. The name comes from this technique originally being a method for printing onto corrugated cardboard, requiring the print plate to be flexible in order to maintain contact with the cardboard.
It uses rubber plates to print on awkward surfaces. It is advantageous as it can use a wide range of inks and can print fairly easily on a multitude of materials. The inks used are often fast drying, therefore decreasing production time. The main printing method worldwide for flexible packaging is rotogravure, for large runs and flexography for large to medium runs[7].
Typical applications: paper and plastic bags, milk cartons, disposable cups, envelopes, labels, and newspapers[7].



LETTERPRESS

Letterpress is a way of printing text with movable type. It comes from early Chinese woodblock printing. The letters act like stamps as their raised surface is inked and pressed against a smooth substance to transfer the letters in reverse. Letterpress can also refer to the impression of inked media, like plates or linoleum blocks onto a smooth substance. It is not very common as a method nowadays although still used for self-adhesive labels through use of photopolymer plates and UV curing inks[7].

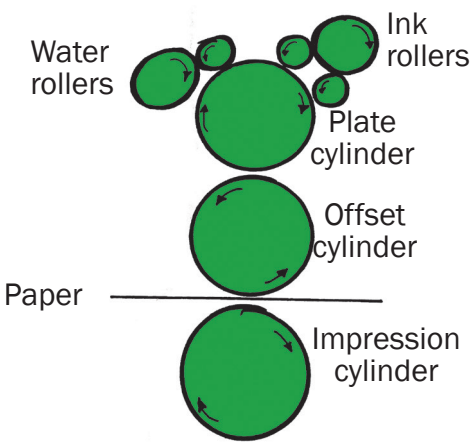
Typical applications: some newspapers, books and special editions, but mostly replaced by offset printing now[7].



OFFSET

Offset printing is a widely used technique. The inked image is transferred – or offset – from a plate to a rubber blanket and then onto the printing surface. The areas to be printed obtain ink from rollers, where non-print areas attract water, keeping these areas free of ink.
Offset printing allows for: consistent high-quality images, quick and easy plate production, no direct plate contact with print surface prolonging plate life[7].

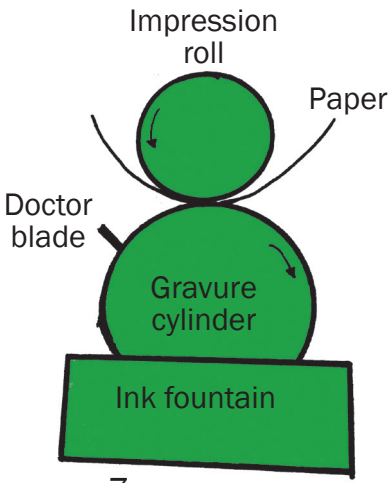
Typical applications: most commonly used commercial printing process[7].



ROTOGRAVURE

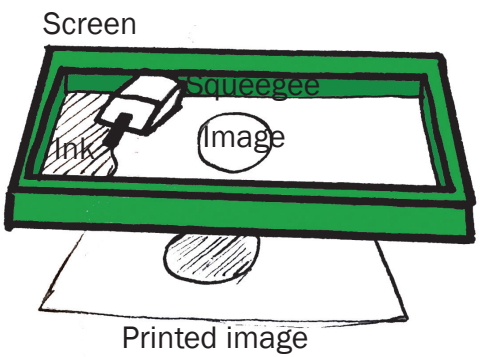
Where the image is engraved onto a copper cylinder that is then put on a rotary printing press. Usually printed on reels of paper, rather than sheets. Rotogravure presses are the fastest and widest presses in operation. They can and do print flooring along with other things. The rotogravure printing press has one printing unit for each colour of CMYK – cyan, magenta, yellow and key.

Typical applications: high-volume packaging and advertising jobs, wallpaper, gift wrap, magazines, greeting cards, and a range of substrates; polypropylene, polyester etc[7].



SCREEN

Screen printing is a technique that creates sharp-edged images by using stencils. It uses a screen made of porous woven fabric. Areas of the screen are blocked off by a non-porous material/ stencil, the screen is then placed atop paper or fabric and ink is pushed through the screen with a squeegee. The vast majority of screen printed products are monochromatic.
Typical applications: t-shirts, hats, CDs, DVDs, ceramics, glass, polypropylene, paper, metals, and wood[7].



DIGITAL VS OFFSET

Offset allows for a great many copies of the same thing – tens of thousands if need be. It produces sharp, high quality images. It is a cheap option for printing commercial quantities. And allows for accurate print colours[13].

Whereas, digital is quick and cheap for smaller jobs. Allows for more flexibility when changing printed items. Uses CMYK so colours may not be as accurate and may not compare to those on-screen. Does not require plates so copies can be different each time if need be[13].


PAPER

GSM

Stands for grams per square metre.

- Refers to the substance weight of the paper.
- 80gsm is standard for normal copy paper.
- Higher gsm means paper is heavier or thicker.
- Higher weight of paper does not always mean thicker paper, it depends on the paper [8].

Examples:

Business card – 400gsm recommended

Poster – 170gsm recommended

Flyers and brochures – 150gsm recommended

(recommendations only, depends on individual job details and requirements)[8]

UNCOATED

Coated paper is simply paper that does not have a coating on it[14].

Some of the benefits of coated paper include:

- More porous and absorbent
- Textured feel usually
- Allows ink to bleed into paper
- Gives a vintage or ‘industrial’ look to the project.

Typical uses:

- Letterheads
- Copy Paper
- Lower quality leaflets and brochures[14]

COATED

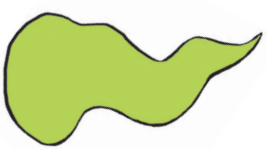
Coated paper is coated by a compound or polymer, often resulting in surface gloss, smoothness and consequent reduced ink absorbency[4].

Some benefits of coated paper include:

- Coating acts as varnish – making it smooth
- Smooth, uniform finished product
- Sleek professional shine
- Absorbs less ink, sharper printed image usually and more durable
- Less absorbency means that artwork can appear more vibrant[4]

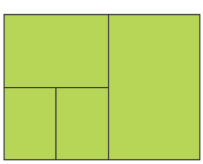
Typical uses:

- Magazines
- Leaflets and brochures
- Book covers



SIZES

A0: 841x1189mm	33.1x46.8in
A1: 594x841mm	23.4x33.1in
A2: 420x594mm	16.5x23.4in
A3: 297x420mm	11.7x16.5in
A4: 210x297mm	8.3x11.7in
A5: 148x210mm	5.8x8.3in
A6: 105x148mm	4.1x5.8in
A7: 74x105mm	2.9x4.1in
A8: 52x74mm	2.0x2.9in
A9: 37x52mm	1.5x2.0in
A10: 26x37mm	1.0x1.5in
DL: 110x220mm	4.3x8.7in
Business Card: 54x90mm	2.1x3.5in [5]



PAPER EXAMPLES

Normal copy paper 80gsm

Pacesetter Coated Digital White Satin 113gsm

Pacesetter Coated Digital White Satin 128gsm

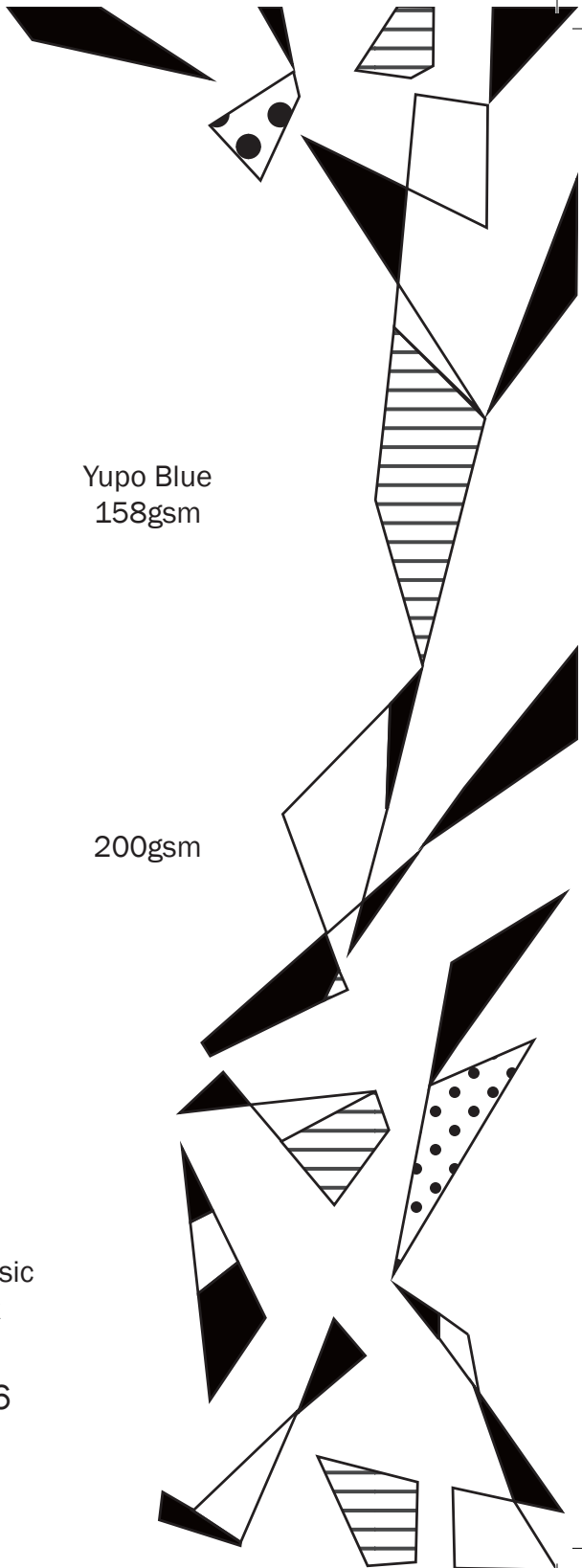
Revive Laser Digital
SPI 148gsm

Yupo Blue
158gsm

Revive Laser
Digital SPI
176gsm

200gsm

Neenah Classic
Epic Black
270gsm




FINISHING

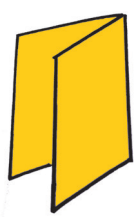
SPECIALTY FINISHES

Are defined as any process applied to paper post-print.

Types:

- *Foiling:* Foil is heated and applied to paper or stock in spots or solid areas to create metallic shine[3].
- *Spot gloss / clear raised ink:* also known as spot UV. This is a thick gloss applied to certain areas, which makes these areas standout. Most effective if surface has been matte laminated beforehand[3].
- *Embossing:* Indents the paper to make a raised area. Debossing creates a sunken area. Blind embossing requires no ink on raised or sunken area[3].

- *Die-cut:* Sharp steel blades are setup in the cut design shape on a wooden board. The paper or stock is pressed down onto the blades and the desired shape is cut. Can include perforating[3].
- *Laser cutting:* Uses a laser beam to cut all kinds of materials very precisely. Can cut wood, metal, acrylic, plastic, fabric, paper, cork, rubber and more. It can be a slow process though[3].
- *Laminate:* Thin film of plastic applied to whole sheet of paper. Cannot be done in spots[3].
- *Folding/scoring:* Just as implied, custom folding is possible, and scoring is sometimes necessary to make folding easier and cleaner[3].
- *White ink:* A nice, unique finish. Most effective on dark paper stocks. Not very common[3].



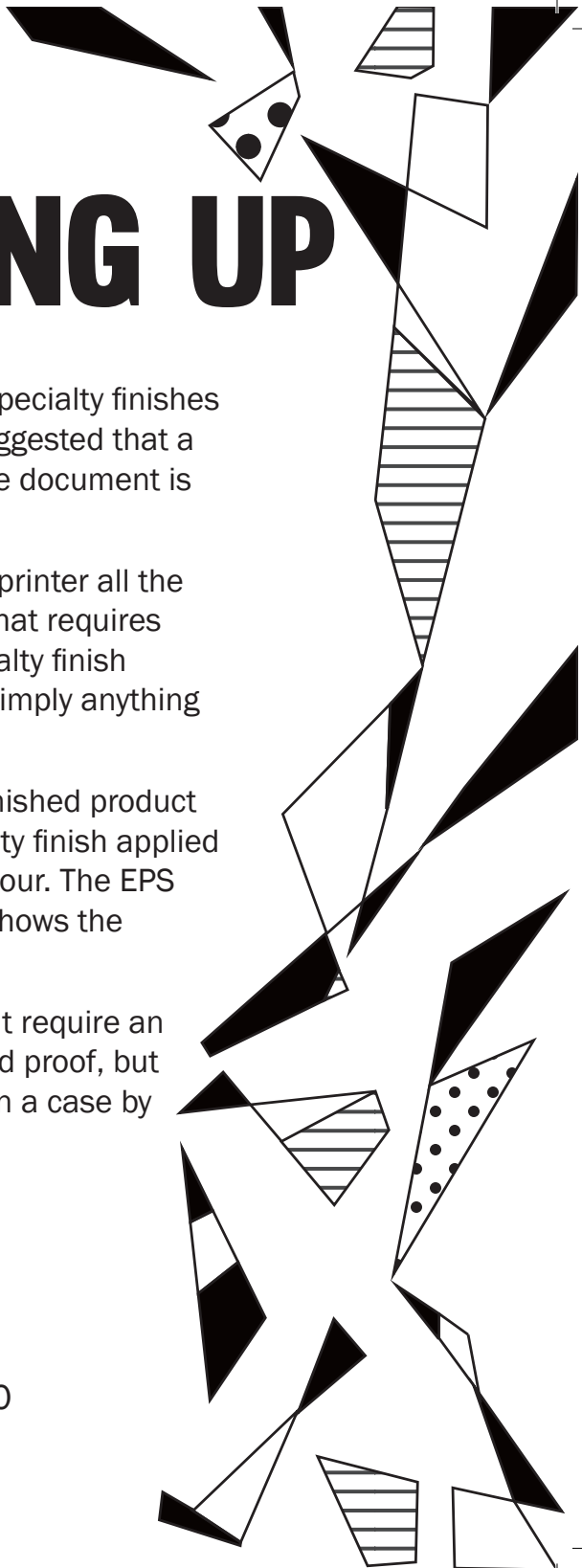
SETTING UP

In setting up files involving specialty finishes for printers, it is normally suggested that a print and proof version of the document is supplied[10].

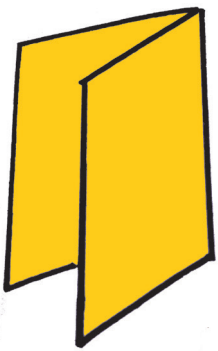
The print version shows the printer all the elements of the document that requires printing – often with a specialty finish layer incorporated – this is simply anything requiring ink[10].

The proof shows what the finished product will look like with the specialty finish applied – often in an outrageous colour. The EPS (Encapsulated Post Script) shows the specialty finish alone[10].

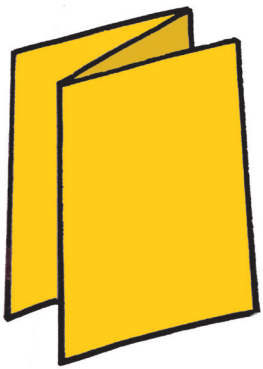
Some specialty finishes don't require an EPS file as well as a print and proof, but this needs to be assessed on a case by case basis[10].



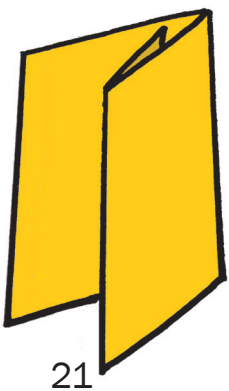
FOLDING



4 page fold

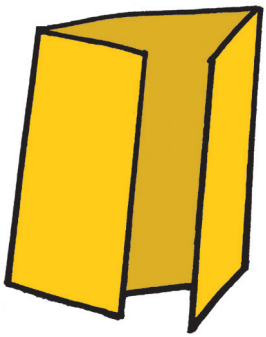


6 page concertina

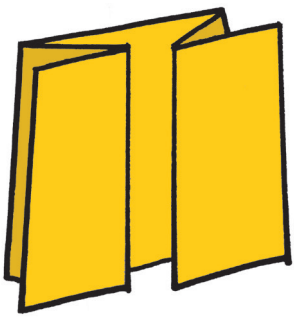


6 page standard letter fold

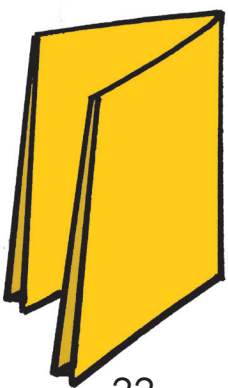
6 page gate fold



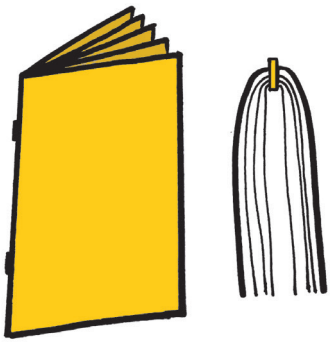
Open gate fold



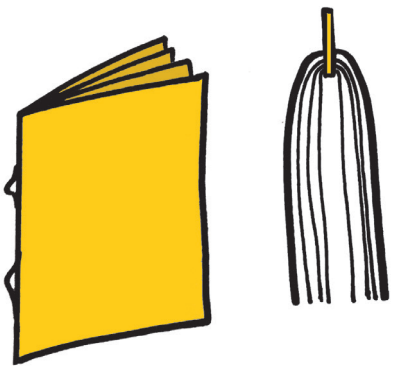
8 page french fold[2]



BINDING

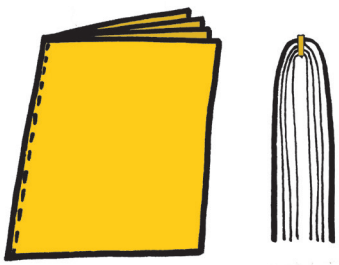


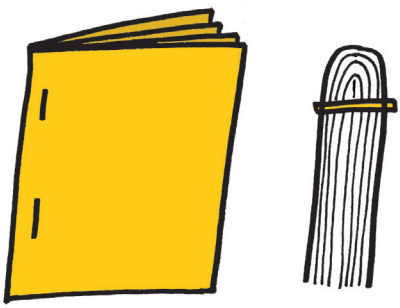
Saddle stitch (8-80 pages): Most common and economical form of binding. Wire is punched through the spine of the document and is bent on the inner side so that pages grip together. It looks very similar to stapling, but is not the same[5].



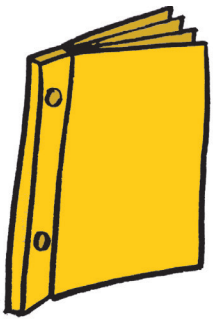
Loop stitched (8-80 pages): Similar to saddle stitching. Wire is made into loops on the outer spine of the document. This is to allow the document to be secured in a 3-ring binder[5].

Sewn bound (8-24 pages): Very similar to saddle stitching, but instead of wire, in this case thread is used. The document is stitched along the spine with this thread[5].





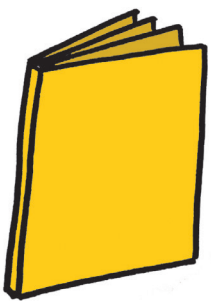
Stab stitched or side stitched (2-300 pages): This is achieved by pushing wire through all pages of the document – including front and back covers. The wire is usually hidden by a cover over top[5].

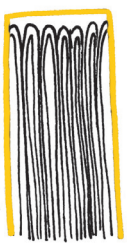


Screw bound (16-400 pages): barrel posts are inserted into holes that have been drilled through the whole document. A cap screw is then affixed to hold the document together. Useful for swatch books[5].

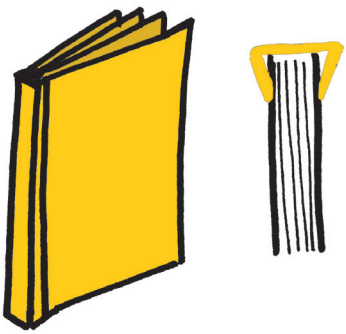
Spiral bound or coil bound (16-275 pages): Wire is threaded through punched holes along the side of the whole document. Allows for document to sit flat or be flipped against itself[5].

Wire bound (16-275 pages): similar to spiral bound, this uses a formed wire that is threaded through punched holes. Also allows for document to sit flat and be flipped back on itself[5].

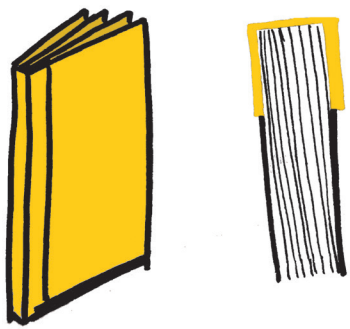




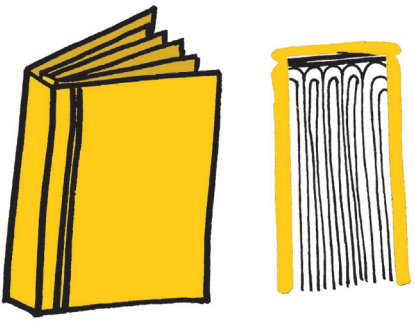
Perfect bound (50-250 pages): Groups of folded pages – also known as signatures - have spines trimmed. These groups are then collated and a wrap-around cover is glued over the spines. This cover is scored to prevent pressure on the glue when document is opened[5].



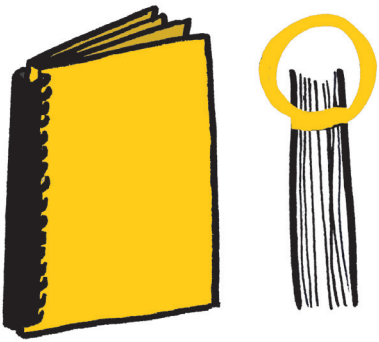
Plastic grip (2-250 pages): uses a pre-made three-sided plastic spine that the spine of the document easily slides into and holds everything together[5].



Tape bound (50-250 pages): Pages are usually stitched together before an adhesive tape is then wrapped around the spine of the whole document to hold all the pages in place[5].



Hardcover or case bound (60-400 pages): Many different types, but usually consists of separate sections of the book being sewn together and then the whole document being glued to paper which is then glued to the hard cover's spine[5].



Comb bound or plastic bound (2-250 pages): plastic comb is fed through rectangular holes in the document's spine. Great for things that need to lay flat[5].


COLOUR

RGB VS CMYK

RGB: Used for computer based projects. RGB is red, green, and blue light. It is known as an additive system of colours because the colours are added together to get more colours. While it is possible to print RGB colours, they may not appear how you expect[1].

CMYK: Used for anything print related. Made up of four colours: cyan, magenta, yellow and key (most commonly black). Each colour represents a separate plate. Key is called this because it contains key information for images, and holds the detail. This is a subtractive colour system as when colours are taken away, white is the result[1].

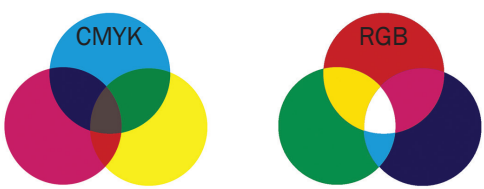


Figure A.

BLACK VS REGISTRATION

Black occurs when the black plate is 100% black and there are no other colours are involved. This black is most effective for text and small details. It is not recommended for large areas of black[9].

A rich black would consist of 100% black and perhaps 30% of the other CMYK colours. This is good for using in large areas[9].

Registration black is where every CMYK colour is 100%. It is important to only use this for marks and alignment. Any larger areas of this would take a very long time to dry and places far too much ink on the paper[9].

SPOT VS PROCESS

Spot or solid colours are pantone colours. Pantone colours are those that come from a tin, that is, they are not the result of 4 CMYK plates creating a colour[12].

Pantones are outlined in a pantone guide, where each individual colour has a number or name to ensure printers and designers are on the same page[12].

Process colour is another name for CMYK. This indicates that in order to produce a coloured image, the file needs to be separated into the four separate colours of: cyan, magenta, yellow and black[12].

These are applied in small dots at varying angles. Spot colours can be emulated using CMYK/ process colours, however it is not always very effective[12].


RESOLUTION

DPI

Resolution for images is usually measured in DPI – dots per inch. In most cases, the image will be produced on the computer, so these dots are pixels[2].

The DPI best for each project often relies on the viewing distance. For example, it is perfectly acceptable to have quite a low resolution image for a billboard because people usually view this from a distance[2].

However the standard recommendation for most print projects would be 300dpi.

It is suggested that resolution never go any lower than 150dpi for any print project[10].

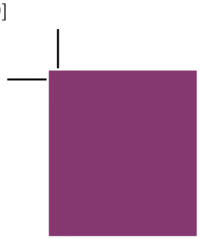

DOCUMENT
SETUP

CROP MARKS, BLEED AND SLUG

Crop Marks: These are small marks that show the printer where to trim the document They are often added as part of saving a print-ready document in InDesign[2].

Bleed: Bleed allows for ink to run to the very edge of the page, once printed and trimmed. It is standard to include 3mm of bleed to any print document[2].

Slug: The slug area is often used to communicate with your printer. The best example of this would be in specialty finish proof files when a slug is usually included to explain 'the pink area is the die-cut.' [10]



PREFLIGHT CHECKLIST

Illustrator:

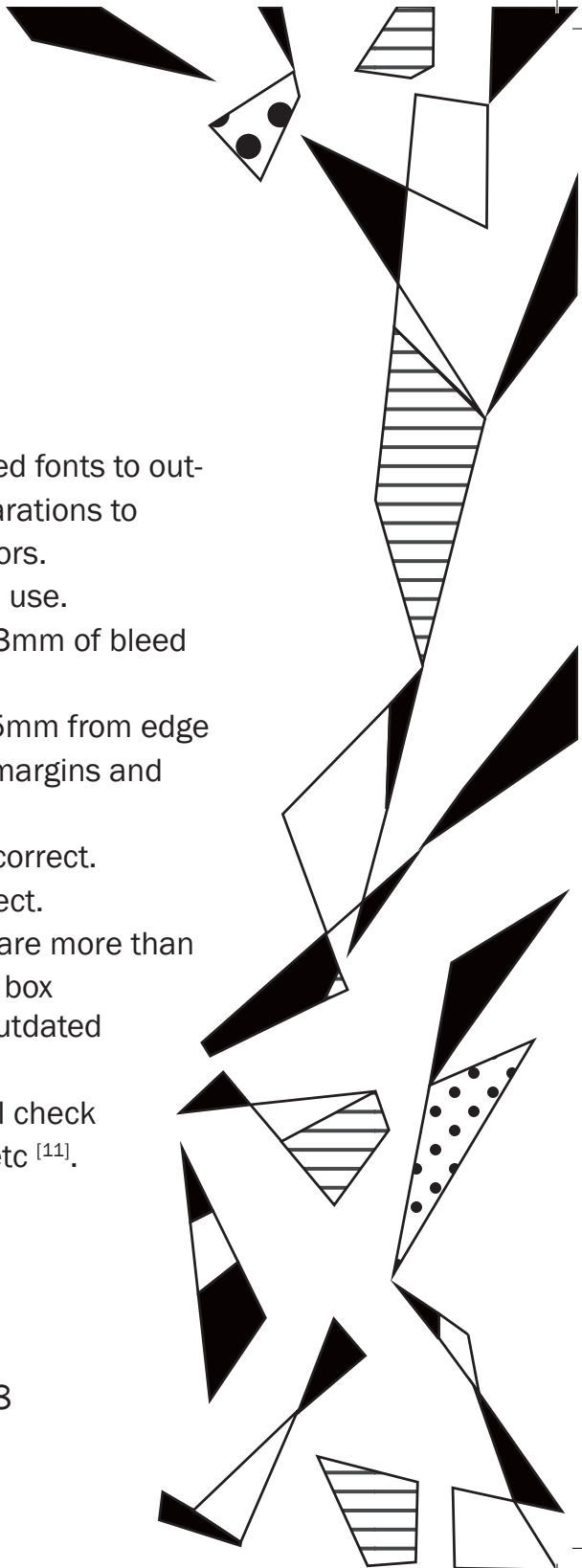
- Delete all objects not for print
- Ensure colours are correct system and remove unused swatches – eg: CMYK or Pantone.
- Object -> Flatten Transparency
- Save as a flat copy ensuring to keep the original for alterations

Photoshop:

- Ensure resolution is 300dpi
- Check file dimensions are at the size you wish to print at.
- Check colours are correct – not RGB!

InDesign:

- Spell check
- Convert any downloaded fonts to out-lines Preview separations to address any colour errors.
- Delete swatches not in use.
- Ensure a minimum of 3mm of bleed applied to artwork.
- All text a minimum of 5mm from edge of document – within margins and gutters.
- Ensure details in slug correct.
- Check page order correct.
- Check that no images are more than 100% within bounding box
- Check for missing or outdated links.
- Use preflight to do final check of fonts, RGB images etc [11].



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