Substrate Guide for HP Indigo Digital Presses

Europe, Middle East, Africa,
Asia-Pacific, and Japan

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Overview

This guide has been written to help HP Indigo digital press owners have a greater understanding about media, their properties and characteristics, i.e., how they behave in various conditions and how to optimise their effectiveness. Some specialty substrates are also discussed in relation to general requirements or notable special considerations.

Although written for HP Indigo commercial press users, this guide also contains some information about other forms of HP Indigo digital printing, focusing on the different stresses they put on paper. We hope this will help you to understand why media and digital press compatibility are important to you and your customers.

The advice and suggestions for paper storage and handling demonstrate how optimum conditions will ensure runnability and print quality, as well as achieving the best results from finishing processes. This guide provides valuable information regarding media selection, enhancing your understanding of the choices and contributing to your knowledge of digital printing.

Chapter 1

How paper is made

Variables in the papermaking process and the materials it involves have a major bearing on printability and the performance of the printed product. An understanding of the basics of papermaking helps to clarify the suitability of certain paper grades for particular end-uses.

Take a tree

Printing paper is made from 70-75% wood—a mixture of hardwood and softwood varieties which are carefully combined to give specific characteristics to the paper sheet. Pulp made from recycled fibre is also widely used in papermaking.

Hardwoods produce short fibres, which help produce a smooth, opaque sheet with good runnability, whilst softwoods yield long fibres that are essential for strength. Hard and softwood pulps tend to be used in combination to achieve the desired sheet characteristics. Within the broad categories of hard and softwood, the species of tree largely determines the type of pulp produced, and affects such characteristics as tensile strength, tear strength, brightness, bulk, stiffness and opacity.

Other factors such as climate, soil conditions and the age of a tree can also have a significant effect on fibre quality. The nature of recycled fibre depends largely on the source of the fibre—office wastepaper or household wastepaper collections—and the process involved in its recycling.

Recycled fibre is widely used—particularly in newsprint, super-calendered and lightweight-coated paper as a substitute for mechanical pulp, often reinforced with specific grades of softwood virgin pulp.

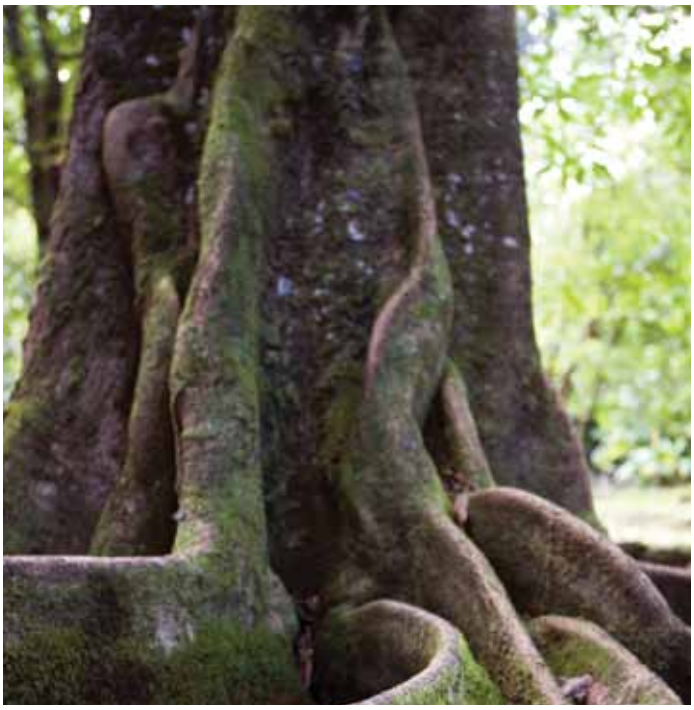
Papermakers cannot control the quality of fibres in recycled pulp to the degree possible with virgin pulp.

However, sophisticated sorting and processing systems designed for handling waste paper are able to remove ink, dirt, glue and unsuitable fibres to a degree which allows the use of up to 100% recycled pulp in the grades mentioned above.

Pulp fact—chemical and mechanical

Wood is prepared for papermaking either by shredding it mechanically into fibres to make mechanical pulp or by cooking it in chemicals to dissolve the fibre-binding lignin to make woodfree pulp. The wood pulp made by these processes is bleached and produces mechanical and woodfree grades of paper, although many grades contain a mixture of pulps from both processes. The brightest papers are those that are woodfree because chemically-pulped fibre is easier to bleach and the pulping process removes more impurities.

Chemical pulp is also stronger than mechanical pulp and more resistant to ageing. It is the absence of mechanical pulp, known in North America as groundwood pulp, which gives woodfree papers their name. Most paper compatible for digital printing is coated or uncoated woodfree paper. Woodfree paper, coated and uncoated, is often referred to as art paper.



Papermaking

Put simply, papermaking is a continuous process of water removal. The paper machine comprises three basic parts: the wire section, press section and dryer section. In the wire section, a highly diluted mixture of pulp, fillers and chemicals is uniformly distributed from a headbox across a moving wire mesh up to 10 metres wide. In this part of the process, water is removed through gravity, vacuum and centrifugal force.

The resulting web is drawn through a series of presses—the press section. These presses consist of pairs of steel cylinders which squeeze water out of the paper web like a mangle. As the paper leaves the final press, it bears some resemblance to a sheet, although it still contains some 60% water. In the dryer section, the web is carried over numerous steam-heated cylinders, which evaporate most of the remaining water. The sheet is finally wound on a roll ready for further processing into sheets or printer-sized rolls. The demands of quality, consistency and efficiency mean that printing grades of paper are made at high speed—up to 1800 metres/minute—and the process involves absolute precision and high-level automation.

Coated or uncoated?

Digital printing uses both coated and uncoated papers Coated papers offer superior smoothness, opacity, colour, contrast and print definition. Uncoated papers offer a range of textures, shades and pleasing tactile contrast. Coated paper also offers benefits for the printing press—it produces less dust and other potential contaminants. Its use prolongs the life of the blanket, increases runnability and reduces downtime. Single or double layers of coating may be applied on one or both sides of the paper. Single-coated paper tends to have greater bulk than double-coated paper, whilst double-coated paper can achieve higher brightness and opacity.

Coating produces a matt surface, which can be made glossy through calendering. The higher the coatweight, the greater the gloss potential. There is considerable cross-over in the end uses of paper coated on just one side (C1S) and paper coated on two sides (C2S).

Application examples unique to C1S papers include products where one side of the sheet carries glossy images and the other side, text, such as advertising flyers, postcards, calendars, labels and packaging. Book and document covers also suit this type of paper. Where the same surface is required on both sides of the sheet, as in most publication and commercial printing applications, C2S papers are used.

Calendering and coating

Paper may be coated on-line using a unit added after the paper machine's dryer section or in a stand-alone, off-line process once papermaking is complete. Coatings are prepared in an automated, computerised coating kitchen to a formulation that reflects the end use. The coatings applied in the paper mill consist of various combinations of clay, pigments, binding agents and small doses of special additives.

Coating is usually applied using an applicator roll or adjustable blade which controls the amount of coating applied to the paper. Other coating methods include roll coating, air knife coating and brush coating. The coating is dried using non-contact methods such as infrared, hot air or a combination of the two. When paper is double-coated, the formulation of the first and second coats is different, with the formulation optimised to achieve the desired opacity and gloss level. Coated surfaces which are matt provide good readability.

Where a gloss surface is required, however, the paper is subsequently calendered.

A calender works like an iron. A nip formed by a pair of horizontal cylinders smoothes and levels out the paper and improves its gloss. Most printing papers are calendered to some extent, using systems which vary from a single pair of metal cylinders after the dryer section on the paper machine, to an on- or off-line supercalender with multiple cylinder-pairs designed to impart extra gloss, using paper- or cotton-covered rolls arranged alternately with metal rolls. The supercalender gives its name to SC grades of paper. Another calender variety is the soft calender, which uses a roll with a soft, pliable cover, against which the paper is pressed by a hard-surfaced roll to enhance gloss and printability. Film-coated offset is a typical grade for which soft calendering is used and soft calendering has often been specified because it can run faster than a supercalender and therefore be used on-line. Variants of the supercalender theme have emerged which can cope with on-line operation on a fast paper machine.

Fast, modern paper machines, like the one at Metso Paper/Yueyang Pulp & Paper Group Company Ltd., occupy mills that can be the size of a small town. (Image courtesy of Metso Paper/ Yueyang Pulp & Paper Group Company Ltd.

The highest gloss is achieved by cast coating, which means the freshly coated paper (always coated offline) is brought into contact with a highly polished chromium plated heated metal surface. The heated metal solidifies the coating, which results in a mirrorlike surface.

Opacity—shut out the light

To test a paper sheet's opacity, hold it up to the light—paper opacity is a measure of its ability to prevent light from passing through. A major benefit of opacity is that it prevents show-through of dark print from the reverse side of the sheet or of print in contact with the reverse side. In other words, you do not want the text or images from pages 4 and 5 to show through if you are reading page 3.

So it is particularly important for duplex printing, where visibility of images and readability of text can be adversely affected by low opacity. Opacity is achieved through the use of fillers and pigments such as titanium dioxide and calcium carbonate. The variety of pulp used also affects opacity. For example, pulp produced from the eucalyptus tree produces good levels of opacity.

Paper finished to reels and sheets
(Image courtesy of International Paper)

Chapter 2

Paper sizes and finishes

Paper suppliers and manufacturers promote their individual brands but common classification, grading and grade-naming practices simplify the paper buying process.

The most commonly used paper size in HP Indigo digital presses is 32 x 46 cm. A new HP Indigo press platform will also offer a 75 x 53 cm paper format.

The A classification

This is a series of standard trimmed sheet sizes in millimetres established by the International Organisation for Standardisation (ISO). The A series is commonly used in Europe for general printing purposes. The basic size, A0, is 841 x 1189 mm (i.e., 1m^2). Each subsequent size is obtained by either doubling or halving the longer dimension, while the shorter dimension always stays in the same ratio to the longer dimension (1 to 1.414). The standard letterhead size, A4, is 210 x 297mm.

The B classification

An ISO standard of trimmed sheet sizes, with the same ratio of dimensions as the A series. It is intended for posters and wall charts, etc., and fills the gap between adjacent sizes in the A series.

Matt or glossy?

The terms matt and glossy describe the way in which light is reflected off a sheet of paper. Coated paper can have a matt or glossy finish. Gloss is achieved through calendering but only on a coated surface. Gloss increases with coat weight and the degree of calendering. Matt paper absorbs and diffuses light, making a non-reflective, easy-to-read surface. Glossy paper reflects light to give a shiny, lustrous appearance, which can enhance printed images.

A glossy surface provides a smoothness that produces even printing and minimises mottling. The almost mirrorlike finish of cast coated papers is achieved when the freshly coated paper surface is brought into contact with a highly polished chromium-plated heated metal surface. The coating mix solidifies whilst in contact with the metal surface, thus locking in a high-gloss finish.

Uncoated paper

There are many grades of uncoated paper; they can be textured or smooth, considered premium or commodity. Calendering allows uncoated paper to have a smooth, silky surface. Other processing during papermaking can result in the surface taking on embossed finishes like felt or linen. The use of uncoated papers and applications are increasing in digital printing. Coated media exhibits more tactile appearance.

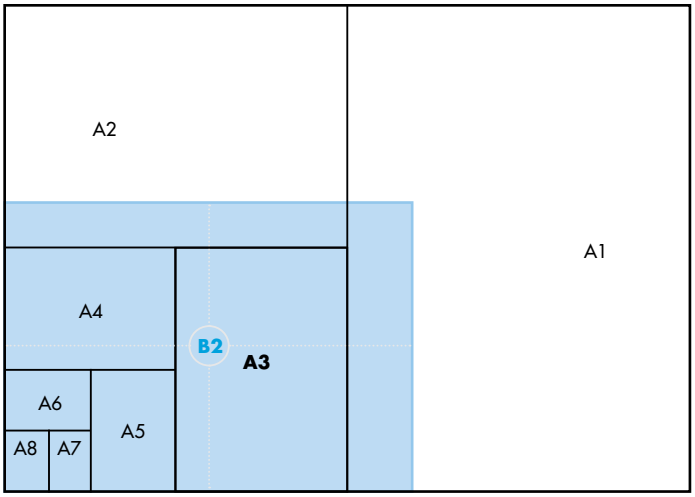
Recent developments in the paper industry have resulted in a healthy variety of premium and opaque uncoated optimised media for use on HP Indigo digital presses.

With the Substrate Process Parameters (SPP) function on the HP Indigo 7600 Digital Press, HP Indigo 5600 Digital Press, and other presses in those series, many standard uncoated papers can be used for publishing applications. Check the HP Indigo Media Solutions Locator for details.

With digital printing becoming a mainstream production process, the gamut of paper for HP Indigo digital presses continues to expand rapidly as the market grows. The majority of HP Indigo media approved solutions have little or no changes made to them for compatibility. They are precision cut to size, sold and supported by virtually every paper manufacturer one could name. Surface optimisation and treatment is an option, but finishes and well-known name brands have been developed and approved and backed by third party suppliers.

HP Indigo 10000 Digital Press

As HP Indigo's family of printing presses grows, the substrate industry is keeping pace. Launching the new HP Indigo 75 x 53 cm sized platform at drupa 2012 highlights the wide range and availability of HP Indigo media for all types of print applications, sizes, layouts, and end uses.



Wide range of finishes

The surface characteristics of paper depend on the grade and can differ considerably. The finish affects general printability, ink adhesion and smoothness. It also helps create the impact of the finished product. The variety of finishes available is virtually limitless but there are broad categories which are self-explanatory and widely applied. Uncoated paper finishes include vellum, felt, smooth, laid, embossed and linen. Coated paper grades usually come in a choice of gloss, dull, matt, silk, velvet and embossed.

Grain direction and stiffness—why they matter

The direction in which the wood fibres lie (i.e., the grain) in a sheet of paper is significant. It affects the paper's stiffness and is determined by how the supplier cuts it into sheets. A sheet is stiffest in the direction of the grain and stiffness needs to be optimised for printing quality, runnability and finishing requirements such as folding. A typical A4 sheet is cut from the roll such that the grain runs in the direction of the long dimension from top to bottom (the long grain).

The grain direction of a sheet is determined by how a paper is cut from the master roll. There is no single international standard for indicating whether a paper is long or short grain, and a number of local conventions exist, among them: indicating the grain direction by the numbers in the sheet measurement. The European standard is 32 x 46 cm for long grain and 46 x 32 cm for short grain. For more information, consult your paper merchant.

For effective transport, long grain should be used when printing paper weights of 170 gsm and below, and short grain above 170 gsm weights. There are a number of simple tests that can be carried out if grain direction needs to be determined.

The tear test:
Tear a sheet of the paper both along its length and across its width. One result will be relatively straight, and the other more jagged. The straighter tear is in the grain direction.

The bend test:
Bend a square test sheet in both directions. The bend of least resistance is along the direction of the grain.

The fold test:
Fold a test sheet both lengthwise and across. The smoother fold is in the direction of the grain.

The nail test:
Using the nail on your thumb and middle finger, score the test sheet across and down its length. The score along the grain is relatively straight, whilst the score across the grain is wavier.

The moisture test:
Sprinkle a few drops of water on the test sheet. After a moment, the wet area will pucker. The direction of the length of the pucker is the grain direction.

Chapter 3

The HP Indigo printing process

To understand the principles of HP Indigo printing is to appreciate why the process is so convenient and the printed image of such high quality.

The HP printing engine performs its operations in the following order:

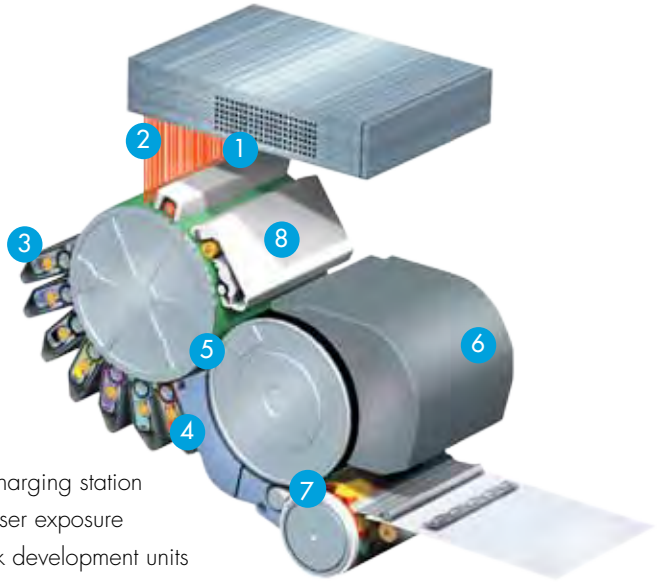
1. Electrostatic charging of the electrophotographic Photo Imaging Plate (PIP) which is mounted on the imaging cylinder.
2. Exposure of the PIP by a scanned array of laser diodes. These lasers are controlled by the raster image processor, which converts instructions from a digital file into 'on/off' instructions for the lasers.
3. Image development performed by the Binary Ink Developer (BID) units.
4. Transfer of the inked image to the blanket cylinder.
5. Removal of any residual ink and electrical charge from the PIP.
6. Heating of the inked image carried by the blanket.
7. Transfer of the heated inked image to the substrate held by the impression cylinder.

The above operations are repeated for every colour separation in the image.

Additional details about the process are as follows:

1. **PIP charging.** A clean, bare PIP segment rotates under a corona wire called the Scorotron unit. The Scorotron unit generates electrical charges which flow towards the PIP surface and cover it with a uniform static charge.
2. **PIP exposure.** As the PIP cylinder continues to rotate, it passes the imaging unit, where up to 12 laser beams expose the image area, dissipating (neutralising) the charge in those areas. When the exposed PIP rotates toward the next station, it carries a latent image in the form of an invisible electrostatic charge pattern, which replicates the image to be printed.
3. **Image development.** There is one BID for each colour. During printing, the appropriate BID engages with the PIP using an inking roller. HP Indigo ElectroInk is also charged. The opposing electrical fields between the PIP and the BID attract the ink particles to the image area and repel them from the non-image areas.
4. **First transfer.** The PIP rotates to come in contact with the electrically charged blanket on the transfer cylinder and the ink layer is transferred electrically to the blanket.
5. **Cleaning station.** Finally, the PIP rotates past a cleaning station, which removes any residual ink. At this point, this part of the plate surface has made a complete rotation and is ready to be recharged for the next image.
6. **Second transfer.** In the meantime, the HP Indigo ElectroInk is heated on the rotating and heated blanket. This causes the particles to melt partially and blend, forming a hot adhesive liquid plastic. As the ink comes into contact with the substrate, which is significantly below the melting temperature of the particles, the ink solidifies, sticks to the substrate and peels off the blanket completely, ensuring total transfer from blanket to substrate. This leaves the blanket clean to accept the next impression as it rotates past the PIP cylinder. HP Indigo digital presses print multiple colours from the same offset blanket. The cycle repeats itself for each colour separation, and the only difference between the cycles is in the ink application and the image data, which correspond to the printed colour separation.

HP Indigo 7600 Digital Press



1. Charging station
2. Laser exposure
3. Ink development units
4. Pre-transfer unit
5. First transfer
6. Blanket heating
7. Second transfer
8. Photoconductor cleaning station

One shot, multi-shot, sheet and roll

HP Indigo's web-fed digital presses use a one-shot colour process, as it is not possible to wrap the material around the impression cylinder for multiple passes. In the one-shot process, the PIP cylinder rotates several times, transferring a succession of separations and building the colours up on the blanket, before they are transferred to the substrate, all in the same impression pass.

This process applies to some of HP Indigo's presses for printing on synthetics, films, and "stiff" substrates, such as cartons and plastics. In the multi-shot process, suitable for sheet-fed applications, one colour separation is created at a time on the Photo Imaging Plate (PIP), then transferred to the blanket and on to the substrate. The substrate stays on the impression cylinder for several rotations as it receives each separation, printed separately, one after the other. As the final separation is printed, the substrate is delivered for duplexing or to the output tray.

HP Indigo ElectroInk

HP Indigo ElectroInk, as used on all HP Indigo digital presses, is a liquid ink containing electrically charged ink particles, available in a wide range of colours. HP Indigo ElectroInk enables digital printing by controlling the location of print particles electrically, as with other digital printing technologies, such as dry toner xerography. Only one formulation of HP Indigo ElectroInk is needed to print on any substrate the press can handle. This allows rapid switching between substrates without having to worry about changing ink.

Advantage over dry toner

Unlike dry toner xerography, HP Indigo ElectroInk uses particle sizes as small as one to two microns. The particle size used in dry toner xerography is limited, as particles that are too small can become airborne and uncontrollable. The higher the printing speed, the larger the particles need to be. The advantage of small particle size in a liquid carrier is that it enables higher resolution, uniform gloss, sharp image edges and very thin image layers. The thin image layer closely follows the surface of the paper, resulting in a highly uniform finish, complementing that of the paper.

So, HP Indigo ElectroInk produces results to match those possible with conventional offset printing. Dry toner depends heavily on the electrostatic properties of paper and small changes in relative humidity in the environment can cause noticeable variables in print quality. The high fusing temperature required for xerography limits the choice of coated paper or plastic film that can be printed.

Feeding

HP Indigo ElectroInk comes in a concentrated paste which is loaded in the press in tubular cartridges in a "cleanhands" operation. In the press, the paste is fed into ink supply tanks and diluted with oil to form a fluid of carrier and colourant particles ready for printing.

HP Indigo ElectroInk transfer

The HP thermal offset process uses a heated blanket, which melts the pigment-carrying particles and blends them into a smooth film. When this film makes contact with the cooler substrate, the ink solidifies immediately and then transfers and adheres strongly to the substrate.

Fibre orientation and formation

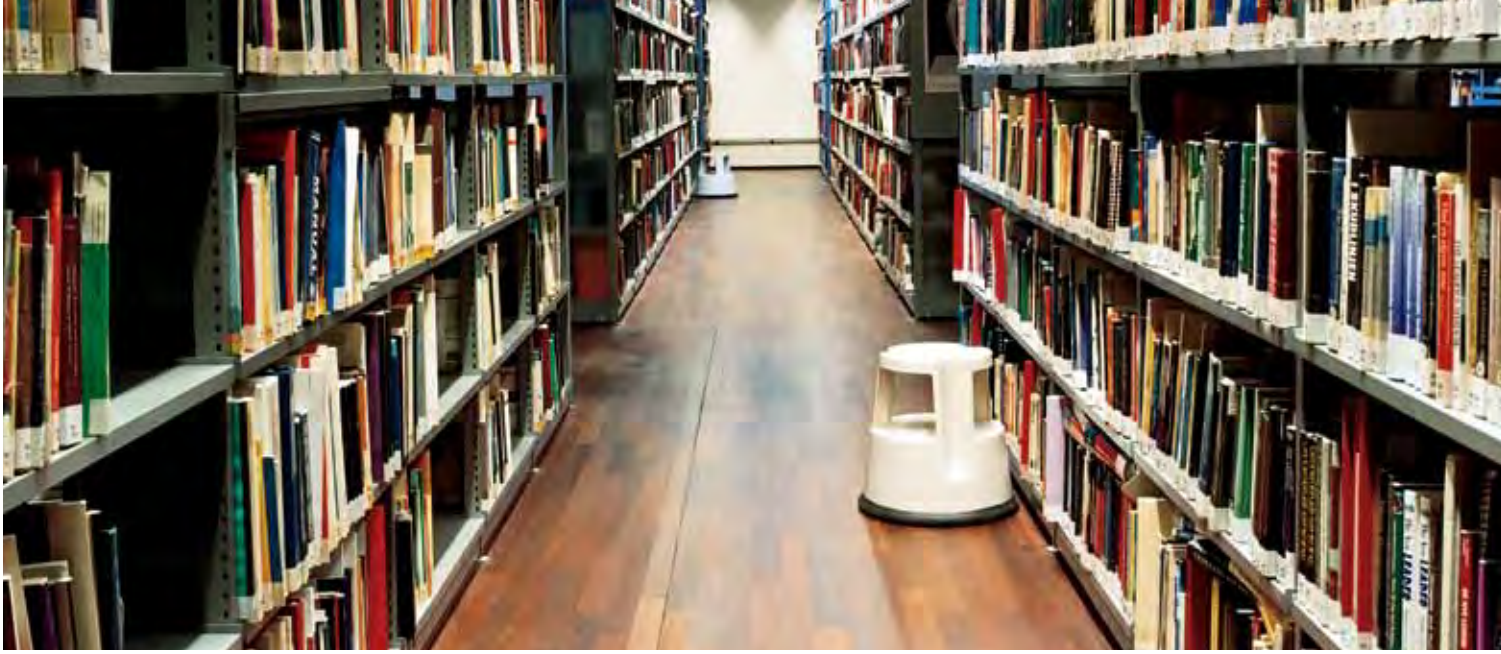
The use of sheets with the correct fibre orientation is essential for meeting the stiffness and runnability requirements placed on paper.

To achieve optimum runnability when using papers 170 gsm and above on HP Indigo digital presses, we recommend the use of short grain sheets, where the fibres usually lie parallel to the short dimension of the sheet. This enables the sheet to transport properly and be flexible enough to rotate around the cylinders to accept the ink evenly. When using sheets below 170 gsm, long grain sheets are recommended for the print run. Formation describes how the distribution and orientation of fibres is controlled at the "wet end" of the paper machine. Good sheet formation reduces the risk of curl, bent edges or waviness and ensures the uniformity of print quality over the printable surface.

Duplex printing

Automatic duplex printing requires the press or printer to print on both sides of the page without the use of turning or an intermediate drying stage. HP Indigo ElectroInk enables duplex printing, as the sheet is sufficiently dry as soon as it leaves the first pass of the press setting it up properly for the duplexing action. Printing on both sides of the sheet demands high standards in paper production. Cutting must be absolutely square for runnability and register. Also, opacity must be adequate to prevent show-through of text from the reverse side of the sheet.

Duplex printing is particularly sensitive to curl, bent edges and waviness, which emphasises the need for good sheet formation in the paper making process.



Chapter 4

Using the right paper

HP Indigo recommends the use of approved papers which have the appropriate components that contribute to the right surface chemistry and are therefore compatible with HP Indigo ElectroInk. Using non-approved media could encounter risks, such as paper jams, reduced blanket life on the press and diminished scratch resistance. They can also affect your warranty or service contract. An inappropriate choice of paper can render the quality of commercial work unacceptable.

Paper surface chemistry is important for HP Indigo ElectroInk because the paper and the ink need to be attracted to each other. Incompatible paper chemistry will result in reduced HP Indigo ElectroInk transfer, poor ink adhesion, reduced productivity and quality of the output, and increased use of consumables. The compatibility of the ink with the paper is heavily reliant on the chemistry of the binder and the pigment. Styrene butadiene is preferable to acrylics as a binder, whilst calcium carbonate is the pigment of choice, rather than china clay. HP has taken the guesswork out of media selection and provides an approved list of substrates, suitable for every application.

Eco-friendly and recycled papers

More than 1100 media with environmental certifications are available for HP Indigo commercial presses, and dozens are available for HP Indigo labels and packaging presses. A broad range of media with recycled content is also available. Details on all of these media, including their environmental certifications associated, percentage of recycled content, and availability in your part of the world, are listed in the HP Indigo media locator tool. The tool can be accessed through the HP Indigo customer portal at **www.hp.com/go/medialocator.**

No longer limited to recycled papers, multiple classifications of paper and substrates are available that can give you peace of mind that the products you produce are sound for the environment and for your press.

The following guide is intended to help throw light on the certifications and classifications that can be associated with eco-friendly papers. We hope that you will continue to seek and support these papers for use in your HP Indigo digital press.

These are some of the key environmental certifications for paper. There are two main categories: responsible forestry practice certifications and responsible manufacturing certifications.

I. Responsible forestry practice certifications
These identify paper products derived from sustainably managed forests and verified recycled sources. The wood fibre used in paper that bears the logo of such a certification has passed through an unbroken 'chain of custody' of businesses certified as behaving in accordance with the requirements of the label (see box).

FSC—The Forest Stewardship Council is an international certification well-recognised around the world. It identifies products which contain wood from forests managed with respect for people and the environment. More information at www.fsc.org.

PEFC—The Programme for the Endorsement of Forest Certification is an umbrella organisation that works by endorsing national forest certification systems developed through multi-stakeholder processes and tailored to local priorities and conditions. Visit pefc.org for further details.

SFI—The Sustainable Forestry Initiative is an independent, non-profit organisation that aims to promote sustainable forest management. US-based SFI is a member organisation of PEFC. SFI-certified papers are available mainly in North America. More information at www.sfiprogram.org.

II. Responsible manufacturing certifications

These are more concerned with how the paper is manufactured, although they may also contain stipulations about how the wood fibre used in the paper was sourced.

European Union Ecolabel—This European certification provides evidence that the paper production has a lower environmental impact than uncertified products, including selection of the raw material and manufacturing. The production process criteria set strict requirements for use of natural resources and chemicals, energy consumption, emissions to air and water, and for waste management. Visit **ec.europa.eu/environment/ecolabel** for further details.

Chain-of-custody certification for print shops

Chain-of-Custody (CoC)—is the unbroken path of products from the forest and recycling mill, through to the finished print. In order for the paper that arrives at the end user to bear a responsible forestry practice certification, all elements of the upstream supply chain must have been CoC certified by the relevant certification body. As the last link in the chain, the print shop also needs be CoC certified by one or more of the responsible forestry practice certification bodies. More information is available on the FSC, PEFC and SFI websites, respectively.

Recycled paper

Paper is the world's most recycled product. In the US, some 63% of paper products are recycled, and this figure is even higher in parts of Europe. A proportion of the printed paper recovered is recycled back into printing papers, rather than being used for products such as tissue or cardboard. Using paper with recycled content can help to conserve natural resources. US Environmental Protection Agency guidelines recommend that uncoated papers contain 30% recycled content based on Post Consumer Waste (PCW) and that coated papers contain 10% PCW. However, many papers are available with up to 100% recycled content. The HP Indigo media locator tool provides details of the recycled content of each paper listed.

Choosing the right paper

Testing and certification

Only paper that meets certain criteria can be expected to provide trouble-free performance in the digital printing press and produce high quality results. Rigorous testing is essential to ensure that a paper product is suitable for digital printing.

A comprehensive testing and certification system means suppliers can establish a paper's compatibility quickly and easily.

Certification program

Extensive facilities are available to test substrate compatibility for use on HP Indigo digital presses at the HP testing facilities in Singapore and the Rochester Institute of Technology (RIT) in North America, a highly respected independent teaching and research institution. These resources allow substrate manufacturers and suppliers to check substrate suitability for HP Indigo digital presses.

The certification programme continues to expand the number of media that provide excellent results on HP Indigo digital presses. With more than 3500 approved media available worldwide, the HP Indigo family of presses prints on the industry's widest range of substrates for high-end digital colour printing—from standard papers, to transparencies, labels and synthetic substrates.

Substrates for specialty printing include PVC, polyester and polycarbonate. This extensive selection enables HP customers to broaden their digital printing applications, differentiate themselves and add value to their services.

The qualification procedure for substrates comprises two parts. The first is a screening test to check fundamental compatibility. During the second test, the substrate is subjected to a more comprehensive evaluation and many parameters of the press-media interaction are checked.

The tests ensure the substrate can be used in duplex and collation modes. Upon completion of the various test procedures, a full, detailed report and printed samples for each substrate tested are provided to the supplier. If the substrate is successful, the media is approved and posted on the HP Indigo Media Solutions Locator section on **www.hp.com/go/medialocator,** an exclusive portal for HP Indigo customers, offering a comprehensive resource for the digital printing business.

The substrate qualification process involves a series of tests:

Runnability. How smoothly the substrate runs through the press.

Ink transferability. The quality of ink transfer from the blanket to the substrate, demonstrated by highlight dots, thin lines, heavy images and image edge integrity.

Blanket-substrate compatibility. The meeting of substrate and blanket can leave a blanket memory effect, causing gloss differences between solids and background areas of the previously printed image.

Blanket-temperature operation window. The range of blanket temperatures across which the substrate performs. The wider the range, the greater the substrate's compatibility.

Special processes. Substrates are also evaluated for use in high coverage photo applications and use with commercial white ink. As these more challenging applications demand high performance substrates, the HP Indigo Media Solutions Locator notes media that pass these special evaluations.

Ink-substrate interaction, reflected in:

- The degree of ink fixing to the substrate
- Ink layer abrasion resistance (depends on application)
- Ink layer flaking, the degree of which determines the printed substrate's ability to withstand a variety of post press operations

Chapter 5

Print applications

The HP Indigo digital family of presses prints on a broad range of substrates so they are suitable for an unusually wide range of applications.

If your HP Indigo digital press has just been installed and you are familiarising yourself with its operation, it is strongly recommended that you use approved substrates, whose performance is backed and supported by the suppliers and manufacturers. Usually you will buy the substrates from a local paper merchant, who will offer a range of approved and/or optimised substrates.

It is important to build a close working relationship with the supplier or merchant of approved and optimised substrates, in order to secure supplies. When your HP Indigo digital press was installed, you were given a user ID number and password to access the HP Indigo Media Solutions Locator, where you will find comprehensive information about the types of substrates available and relevant suppliers. The site is updated regularly so check it frequently.

Digital printing requires different disciplines from those associated with conventional presses, and changes required to integrate digital technology will affect your entire organisation. Remember the three "M"s—Man, Machines and Materials—and you cannot go far wrong.

"Man"—refers to human resources and training. Many new skills will need to be acquired to achieve optimum performance and quality output.

"Machines"—when digital printing is integrated into the workflow, changes don't end with the press:
environmental condition requirements and the informed use of ancillary equipment will be required in the process to meet the needs of digital technology.

"Materials"—it is likely that you will need to develop relationships with new suppliers or place different demands on your existing ones.

Main applications

The following are the main applications for HP Indigo digital presses:

A3 posters	Flexible packaging	Postcards
Agendas and badges	Folding cartons	Posters
Books	Greeting cards	Point of sale materials
Brochures	Invitations	Product datasheets
Business cards	Labels	Sales materials (presenters, etc.)
Calendars	Lay-flat books	Six-page brochures
Car manuals	Leaflets	Stationery
Conference materials	Manuals	Signage
Corporate Identity	Menus	Tent cards
Coupons	Newsletters	Tickets
Direct marketing and mail materials	Personalised catalogues	Transactional printing
Educational manuals	Photobooks	
Exhibition handouts	Pocket folders	

Recommended and approved media can be found via the HP Indigo Media Solutions Locator on the customer portal at **www.hp.com/go/medialocator.**

Under "Capture Business Development", access "Print Media", under which you will find the Media Locator. This will list approved substrates for the end uses you have in mind. But when choosing a suitable paper substrate for a printing job, it is also a good idea to ask yourself a few basic questions to avoid the unnecessary cost of overspecification or the poor result that comes from under-specification.

Essentially, a substrate must be fit for purpose in terms of reliability, quality and performance, whilst meeting cost, availability and variety criteria. Here are some of the questions you might consider. It is not an exhaustive checklist, but it offers examples of typical issues which, if not addressed, can give rise to inappropriate choice of substrate.

Will the finished item be laminated?
If so, there is no need to specify either a glossy or particularly heavy weight paper.

How stiff does the finished item need to be?
Just make sure the stiffness is appropriate for the end use. A tent card is no good if it is flimsy. A wall calendar need not be self-supporting. So for a tent card the basis weight is a practical consideration which determines whether the product "works" or not. For a wall calendar the weight of the paper is an aesthetic and tactile, rather than a practical, consideration.

How much handling must the product withstand?
A menu card in a restaurant that does not change its menu frequently needs to be tough enough to cope with extensive handling. But a take-away "flyer" left on the table in the same restaurant to promote a special deal will only need limited endurance. Choose the weight accordingly.

How resistant should the product be to tearing?
Lamination greatly reduces the risk of tearing but synthetic paper is another option. Synthetic paper is plastic made to resemble paper. It will not deteriorate when exposed to moisture. These substrates will behave like synthetics and should be understood and utilised accordingly.

How resistant should the product be to scratching?
If scratch resistance is important, lamination or other protective coatings such as varnishes are advisable.

Is readability important?
If a brochure is full of text, think carefully about opacity and gloss. You will need to use a grade of paper that limits show-through of image and text on the opposite side of the sheet to ensure readability. An uncoated paper or a matt-coated paper with low surface gloss also improves readability.

Will the printed item be sent by mail?
Consider the basis weight used. A small difference in the weight of the piece can make a big difference to the cost of a promotional mailing. If the printed piece or surface is going to come in direct contact with mailing or sorting devices subjecting it to duress, protective coatings are needed, i.e. laminate or varnish. Protective coatings are commonly used in printing—this is not unique to HP Indigo. HP provides 'how-to' information and guides on protective coating recommendations, and sells and supports an off-line UV coating device to further aid customers with this type of application requirement.

Is image definition a top priority?
For the best contrast and quality appearance, choose a high-whiteness paper. A more neutral whiteness will better suit warm colours and skin tones.

Is whiteness of the paper a top priority?
If yes, choose an uncoated paper. With pure fibres a higher whiteness can be achieved than with a coating layer containing calcium carbonate or china clay.

Will you be duplex-printing?
You will need to pay particular attention to the sheet's trim accuracy. This is another reason for using approved media solutions and suppliers products, which follow strict industry tolerance guidelines for cutting and squareness. Opacity will also be an important feature of the paper you specify.

Does the product need to be folded?
Heavily coated and higher weight papers are more likely to crack when folded. So when specifying heavily coated and heavier basis weight papers for an application that needs to be folded, bear in mind the need for pre-scoring when assessing the job.

Shelf life?

If the printed item is going to be a source of reference for years to come, pay close attention to the paper's specification and longevity of any coatings and treatments.

Some common problems

Most problems encountered in the use of digital presses can be avoided as long as you follow recommended procedures. Here are some practical ways to avoid trouble:

- Optimised or approved media saves time and reduces waste. Do your own surface treatment only when you are sufficiently experienced.
- Make sure your material choices are compatible, otherwise acceptable quality will not be possible.
- Operate and maintain the press and the press' environment according to the instructions in your user manual and those received during the required training courses.
- Colour adjust on the press as necessary, but always try to ensure that files from prepress are accurate and production-ready.
- Specify colours accurately.
- When laminating or varnishing, adhere to strict procedures to avoid melting the HP Indigo ElectroInk. Remember that digital press printed sheets are generally half the size of conventionally printed sheets, so you will need new lamination cassettes.
- Make sure printed matter is protected from abrasion that can occur in converting operations.

Printing on special substrates

From coated and uncoated papers to transparencies, labels and synthetic substrates, the HP Indigo family of digital presses prints on a wide variety of substrates compared to other digital printing processes. The extensive substrate range allows HP customers to broaden their digital printing applications capability and time to market, adding value to the services they offer. Only one formulation of HP Indigo ElectroInk is needed to print on any substrate that is compatible with the press. This allows rapid switching between substrates. Some surfaces need a simple treatment to ensure the image binds to the surface properly and can withstand handling and conversion.

Films

Substrates such as polyester (PET), Polyethylene (PE), Polypropylene (PP, OPP, BOPP, CPP), Polystyrene (OPS), Polycarbonate (PC) and many other laminates can be printed with HP Indigo technology. Finishes include metallic, coated, clear, white opaque, matt and textured. Note that not all synthetic products are sufficiently stable for the HP Indigo multi-shot process. Use of non-approved synthetic substrates might lead to colour-to-colour registration complications or problems in substrate transport and may void your warranty or service contract.

The one-shot process is ideally suited to printing synthetics. Applications are virtually limitless but the main ones are flexible packaging, labels, shrinksleeves and folding cartons, plastic cards, and specialty items. Cost-effective printing of films is a great advantage for the packaging industry, as it allows realistic mock-ups of products to be made pre-launch.

Flexible packaging and films represent a specific market opportunity for on-demand printing. HP Indigo digital presses can even print on shrink-wrap film, which is not possible using digital xerography, because the heat required to fix the toner would shrink the substrate.

Self-adhesive labels

HP Indigo technology can print on any self-adhesive label stock, as long as the surface is compatible with the HP Indigo ElectroInk. A good understanding should be gained in such areas as step-and-repeat, the use of white ink and other spot colours, HP IndiChrome on-press, as well as the implications of finishing for prepress

Chapter 6

Paper problems

Paper is a finely engineered material but its principal ingredients are wood fibre and water, which cause expansion and contraction according to relative humidity. This means that to get the optimal use out of paper and to minimise printing problems, handling and storage need to be carefully managed.

Storage and handling

Paper reams should be kept in their moisture resistant packaging until required, as this minimises the exchange of moisture between the paper and its storage environment. Ideally paper should be stored in humidity- and temperature-controlled conditions. Direct sunlight and extremes of temperature should be avoided, so keep paper away from radiators and air conditioning units. Always store according to the first-in, first-out principle, and store boxes and reams on a pallet rather than directly on the floor, in order to avoid damage. Do not place anything on top of reams or boxes.

Paper producers will specify ideal storage conditions but 50% relative humidity between 19° C and 23°C is typically recommended. Where there is no automatic climate control, winter will be the time of year when the risk of problems is greatest. Ideally, an air conditioning unit should be used to maintain the right level of humidity all year round.

Paper sheets should be allowed to settle at the print room temperature in their wrappers before use. The time this takes depends on the amount of paper in the reel or ream and the temperature difference between the paper and the print room. Allow up to 24 hours. Partly used reams and reels should be returned to their moisture-proof wrapping.

Paper used by xerographic printers is usually very dry and therefore ready to absorb moisture from the surrounding environment. Most papers that have been approved for use on HP Indigo digital presses have the same moisture content as offset papers, so are less susceptible to moisture absorption. Careful monitoring of storage conditions remains crucial for best results.

Fibre dimensions and storage

Humidity is significant because the fibres in the paper can swell and shrink with changes in humidity. Fibres are generally orientated along the length of the paper (long grain), and dimension changes mainly affect the width of the fibre. As a result, expansion and contraction tend to occur across the paper's width, leading to curl, wavy edges or tight edges. Dimensional changes will continue until the paper moisture reaches equilibrium with the surrounding air.

Curl

All paper will tend to curl in the direction it was wound on the reel at the end of the paper machine. A ream of paper will have a defined curl direction and the paper should be loaded curl down in the press. The price of leaving sheeted paper unwrapped and exposed to dry or moist air can be excessive curl—this can cause paper jams. Excessive curl can also result from an uneven built-in tension in the sheet, which is a papermaking issue, or from a significant rise in temperature, which takes place in the fusing station of xerographic digital presses and printers.

Static

Press and finishing equipment jams are common when paper sheets or synthetics, which are especially prone to electrostatic attraction. Static interferes with stacking, collation and feeding, causing jams. Static can also give minor electric shocks and affect varnishing and lamination. It can even interfere with the electronic circuitry of finishing equipment, causing breakdown.

Causes of static include excessive moisture, which increases paper's electrical conductivity and allows charge to leak away. This can result in mottle and low density prints. Reduction in moisture can be counter-productive as it increases the chances of static build-up. Be prepared for static problems on dry winter days when central heating can lower relative humidity and cause static build-up on long runs. Humidifiers in the printing room can be used to control the humidity within the defined specification.

Scratch resistance

Since HP Indigo ElectroInk can be prone to scratching, protective coatings are recommended for applications subject to abrasion, rough handling and duress—such as mailing systems and sorting processes. Other printing processes use protective coatings and varnishes to protect the printed surface from scratching. They also enhance the printed image.

When paper problems occur

The problems described above, which can affect paper, relate to storage and handling conditions. If paper-related problems continue to occur despite compliance with the supplier's storage and handling instructions, contact the paper supplier.

Chapter 7

FAQs about substrates

1. Why does HP recommend approved media?
   Paper that meets our compatibility criteria provides optimum performance in the digital printing press and produces high quality results. Non-approved papers can adversely affect productivity, causing increased paper jams, reduced blanket life, and may lead to quality problems, such as reduced ink adhesion and service risks. It may even void your warranty or service contract.

2. How do I find out which media are approved?
   The HP Indigo Media Solution Locator is part of the 'My HP Indigo' portal at **www.hp.com/go/medialocator.**

   It is a searchable database and is the main source of information on approved substrates for HP Indigo customers.

   Media Locator provides a list with more than 3500 certified substrates. Media lists are segmented per country. Merchant/Distributor of all substrates is featured for each country.

   Find who to talk to and where to buy through links to these sellers. Application based solutions are listed for all segments, allowing for specific search results for label and packaging, general commercial printing, photo, direct mail, etc. Environmental attributes are featured for recycled content and other criteria such as PEFC, FSC and more.

   The Media Locator provides a selection per geographic region of media with basis weight, grade (coated gloss, matt, silk, etc.) and supplier names, in addition to links to suppliers' home pages for local contact details. The majority of media is supplied and supported by independent manufacturers. HP does not guarantee the continued availability of any of the media listed or that the manufacturer will not alter product composition or a production process which may change the media printing characteristics.

Here is how to use the Media Locator:

Access the website and log in

1. Select "print media"
2. Select the Media Locator
3. Specify your media requirements according to:
   a. The HP Indigo digital press you use
   b. The type of media on which you intend to print
   c. Basis weight
   d. Your location

3. How is a substrate tested for compatibility?
   The qualification procedure for substrates comprises two parts—the initial phase evaluates basic compatibility, ink adhesion and transportability, whilst the second phase evaluates all the parameters for optimum performance and press productivity.

   The tests check substrates for:

   - Runnability of the substrate, i.e. how smoothly it runs through the press
   - Ink transferability and adhesion-quality of the ink transfer from the blanket to the substrate, as reflected in highlight dots, thin lines, heavy lines and image edge integrity
   - Blanket-substrate compatibility-interaction between the substrate and the blanket might cause a "blanket memory" effect, reflected in gloss differences between solids and background areas of the previously printed image
   - Blanket temperature operating window—the ability of the substrate to perform through a wide range of blanket temperatures; the wider the blanket temperature range, the greater the substrate's compatibility

- Ink-substrate interaction as reflected in:
  - The degree of ink fixing to the substrate-the adhesion of the image to the substrate
  - The resistance of the ink layer to abrasion (application dependent)
  - The degree of flaking of the ink layer that reflects the printed substrate's ability to withstand various post-press operations These parameters are then examined through a window of blanket temperatures to obtain a comprehensive compatibility evaluation.

4. What are the media specifications for each press?
   In general, for all our sheet-fed presses, long grain is recommended for optimal performance up to 170 gsm; short grain is recommended for substrates over 170 gsm. See product data sheets for individual press media specifications via: www.hp.com/go/graphic-arts, select HP Indigo digital presses.

5. Can papers outside the weight specification of the press be printed?
   The recommended paperweight specification is based on lab testing and field experience of typical papers running under typical circumstances. Papers outside of this may perform in certain aspects adequately, however, they may require more handling, interrupt workflow, impact on productivity due to jams or ultimately affect the integrity of the printed output. For this reason in order to achieve the highest degree of productivity, runnability and quality, the press specifications and use of approved and recommended media is the proper way to ensure press performance.

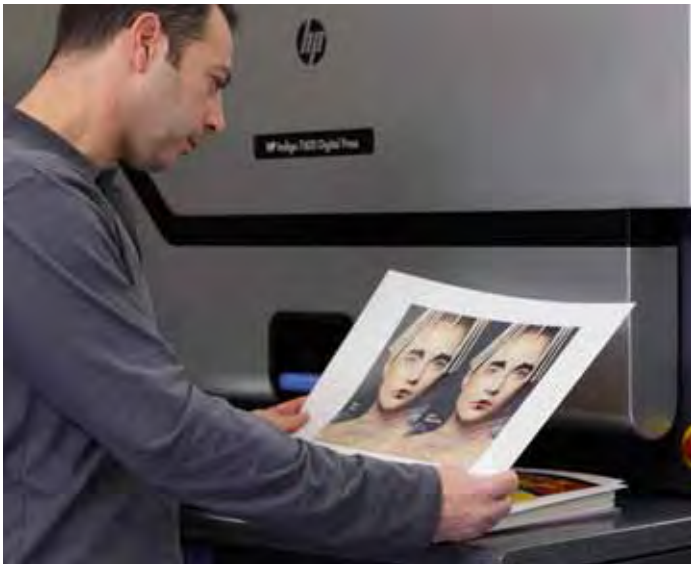
6. Which protection varnishes and primers can be used on HP Indigo digital prints?
   Protective coatings and varnishes are mostly used to protect the print exposed to extensive handling in multiple applications. A comprehensive list of compatible varnishes and suppliers are listed in the How-to Guides that can be found on the HP Indigo customer portal.

7. Can HP Indigo digital presses print on offset media?
   Many coated and uncoated offset grades are used and approved for use on the HP Indigo commercial presses. The majority of the current approved solutions are supplier supported, off the shelf products, with no special handling required. The HP Indigo press 5500 and other recent models have taken one step further and introduced a feature called "SPP" which involves automation of the press' substrate parameters. These adjustments to the press enable the use of certain well known, highly used, uncoated commodity offset papers, widening the market for publishing, educational and transactional printing applications.

8. Can recycled papers be printed on HP Indigo digital presses?
   Not just recycled, but eco-friendly papers. There are evolutionary changes happening in the world of paper today. There are multiple classifications and organisations dedicated to advancing and recognising environmentally responsible processes and organisations. Many suppliers are seeking and achieving recognition for fibre conservation, forestry stewardship, energy use reduction and clean stream emissions.

   All these concerns are high priority to the manufacturers and end users alike, environmental responsibility has extreme importance and value in the Graphic Arts Community. HP Indigo supports a vast array of eco-friendly solutions and suppliers. For more information see our Eco Guide, under the Print Media section of our website mentioned above.

9. Can synthetic products be printed on HP Indigo digital presses?
   Several suppliers have developed a range of optimised product for HP Indigo digital presses, which you can find on the approved list in the Media Locator. Since synthetic products are sensitive to heat, certain products might not be stable enough for a digital printing process. Therefore, only approved substrates should be used.



10. Can self-adhesive or pressure sensitive label material be printed on HP Indigo digital presses?
    Labels are a very effective solution/application for the HP Indigo digital presses, which offers high value return and superior output. A wide variety of suppliers have developed a range of optimised self-adhesive labels for HP Indigo digital presses, which you can find on the approved list in the Media Locator. It is recommended to only use certified substrates.

11. Which other specialty products can be printed on HP Indigo digital presses?
    On the approved list you will find specialty products like: coated one side for postcards and covers, t-shirt transfer paper, etc. Check the Media Locator on the customer portal for details.

12. Can HP Indigo digital printed materials be used for outdoor applications?
    Check the HP Indigo ElectroInk FAQ document on the portal for details on light fastness. Depending on the substrate used, protection (varnish, lamination) might be required.

13. What are the influences of climate conditions on paper transport?
    All paper contains moisture and can take on or lose water content depending upon the surrounding environment. The potential changes to the paper can affect its performance. The HP Indigo Site Preparation Guide sets out climate requirements for optimum performance of paper and press. Paper should be acclimated to the press room environment for a minimum of 24 hours prior to printing, so that it reaches equilibrium with the environment and press.

14. What are the basic paper properties that lead to good ink adhesion?
    The most important paper property is the surface chemistry of the paper. For coated paper both the binder and pigment are important in obtaining optimum adhesion. Another important property is the wetting and absorption rate of the imaging oil into the paper. For uncoated papers, the chemistry of the paper surface (sizing agents, pulp, pigments, etc.) and surface topology are important. The paper and HP Indigo ElectroInk need to be attracted and bond to each other to obtain good ink adhesion. This is why the use of certified, approved media is required for press/media performance assurance.

15. What are the guidelines for handling printing paper?
    Once the paper or specialty media product has been selected, it has to be stored, handled, and loaded properly in order to maximise performance and machine productivity.

General: Do not store paper directly on the floor, since that increases the possibility of moisture absorption. Paper should be stored on pallets, shelves, or in cabinets in an area protected from extremes of temperature and humidity.

Do not open sealed reams of paper until you are ready to load them into the printer. Leave paper in the original ream wrapper and leave the reams in the shipping carton.

Stacking: If cartons or individual reams are to be stacked, they should be placed carefully on top of one another, in order to avoid crushing the edges or causing any other damage.

Temperature: The temperature of the room where paper is stored can have a significant effect on how that paper performs in the machine. Optimum paper storage and printer operating temperature is 20°C to 25°C.

Humidity: Optimum storage conditions include areas with a relative humidity of 50% to 70%. Before you load the substrate on the feed tray, make sure that the sheets are trimmed correctly and are not stuck together. If necessary, trim the stack on two axes (top and left edges), and then fan the sheets before using them.

Chapter 8

Finishing—a brief guide

Effective finishing adds value to any job and greatly enhances quality printing. Equally, perfect paper and perfect printing can be rendered worthless by poor finishing. If lamination is inadequate, cracking may appear at folds and the overall finish can be prone to scratches, abrasion, rub-off and other damage. These defects will be seen by the customer, whatever the standard of printing. Most finishing for digital presses takes place off-line.

The requirement to be efficient puts time pressure on most print jobs but this needs to be balanced against quality. To achieve a quality look and feel against the clock means set up times must be quick and downtime minimised. So choose approved media, which run well in the finishing equipment. Clearing paper paths after jams is a major timewaster. Also, keep to a minimum the number of sheets required to set up the machine. This is particularly important with smaller print runs, where a 200-sheet set up is simply uneconomical.

In-house or trade finisher?

The choice of whether to finish the printed work in-house or use an external trade finisher depends on individual circumstances and the local market conditions. In-house finishing can be more flexible and the printer retains greater control. But idle capacity is a waste of resources and some technologies are only worth the investment for large volumes. Usually the best solution is to do the basic finishing work in-house and leave the more complicated finishing to specialist firms. Equipment a printer might expect to have on the premises includes cutters or guillotines, plus facilities for scoring and folding, lamination and encapsulation, taped adhesive bindings, wire stitching and Wire-O or spiral binding.

Folding

Folding transforms the flat sheet into a variety of formats, each of which suits particular end-uses. Common formats include single-fold, letter, and double parallel, gate, foldout, cross and zigzag. Folding is affected by a number of variants, including size, weight, bulk, grain direction and surface coating. Factors such as humidity, curl, toner/ink coverage, static and the time elapsed since printing will all affect folding. The most basic fold, which is the halving of one sheet to make four pages, is a simple one-fold operation. But as soon as another fold is involved to make eight pages, a closed edge will need to be slit and trimmed and the sheets glued or stitched to keep them together. For a very small run, folding can be undertaken by hand but high-speed folding machines are recommended for quantities of 100 or more. The two main types of folder are the knife and buckle folder.

The knife folder

The knife folder is used by in-line finishers and comprises a knife blade which is controlled by a cam which times the folding action and drives the paper between the two counter-rotating fold rollers. The folded product is carried to the next station between straps and the process repeated as necessary.

Buckle folder

The buckle folder is a stand-alone machine for offline applications. It consists of two rollers which push the sheet between the fold plate (two metal plates) until it hits a preset stop. The rollers continue to push the sheet so it buckles downwards until it is caught between two counter rotating rollers which pull it down and create the fold.

Cracking—why it happens and how best to prevent it

Cracking is usually a problem associated with dry toner rather than HP Indigo ElectroInk, which is flexible. Cracking is mainly the result of paper fibres that break during folding, but certain factors increase its likelihood. Dry paper, folding against the grain, heavier coatings and higher paper weights all make cracking more likely. Any specified time between printing and finishing should be observed. HP Indigo's continuous improvements in ink and paper technology are regularly extending the performance of processes and materials.

The correct choice of folding machine and various production techniques can help reduce the risk of cracking. Solutions include wet scoring and lamination. Reduced machine speed can help, too. Scoring before folding is recommended for papers above 150 gsm. The scoring line should be one to one and a half times the thickness of the paper and run parallel to the machine direction of the paper to avoid folding across the fibre direction.

Lamination/encapsulation

Fortunately, protection and enhancement of the print job go hand-in-hand. The better a product is protected, the better its appearance tends to be.

Lamination/encapsulation consists of a sheet of clear film applied to the printed matter, which preserves the print and gives it an attractive finish.

Encapsulation refers to lamination that is performed on both sides of a sheet, though lamination is often used to describe this, too. If the product needs to be protected and readability is a priority, then matt lamination is the answer. Gloss lamination provides a very attractive appearance but can make a printed job hard to read. There is a wide choice of laminates available so most requirements can be met. Cellulose acetate provides a very high gloss, for example, whilst orientated polypropylene (OPP) is formulated to allow folding without cracking.

Binding

The main binding methods are:

- Saddle stitching. Saddle stitching is one of the simplest binding techniques. It is also the most widely used. Folded signatures are placed over a "saddle" and then stapled along the spine. This style of binding is excellent for booklets, brochures, newsletters, pamphlets, direct mailers and catalogues. Page numbers have to be in multiples of four to make the folded booklet. As few as eight pages with cover can be used, or up to 64 with self-cover.
- Perfect binding. Perfect binding is a method of bookbinding where a flexible adhesive attaches a paper cover to the spine of the assembled signatures. Paperback novels are an example of perfect binding.
- Spiral, Wire-O and plastic comb. These are all a type of mechanical binding which uses a series of double wire loops formed from a single continuous wire run through punched holes on the binding edge. These techniques allow the document to be opened completely flat so are suitable to bind printed matter which requires constant reference, such as instruction manuals. These techniques are relatively cheap and fast so they suit short runs.
- Drilling. Produces holes in those documents that are intended for presentation in loose-leaf binders, ring binders, etc. Drilling allows thicker document piles to be processed in a single operation than punching.

A note about unapproved substrates

HP Indigo digital presses use unique technology to print on an exceptionally wide variety of substrates. To ensure the highest quality of reproduction, and smooth, reliable running of your press, the use of unapproved substrates and media is not recommended. Doing so may ultimately pose a risk and could void your warranty or service agreement.

In some circumstances, new (unqualified) substrates may be tested on behalf of a specific customer either via RIT or at HP Indigo facilities worldwide. In Europe, Middle East, and Africa, the Supplies and Shared Maintenance agreement states:
"Operate the Equipment using only paper and substrates described in Seller's paper and substrate information," which can be found in the list of certified substrates, in the HP Indigo Media Solutions Locator on the 'My HP Indigo' portal at, www.hp.com/go/medialocator.

North America
Hewlett-Packard Company
5555 Windward Pkwy
Alpharetta, GA 30004
USA
Tel: +1 800 289 5986

Europe, Middle East, and Africa
Hewlett-Packard Española S.L
Cami de Can Graells, 1 – 21
08174 Sant Cugat del Valles
Barcelona
Spain
Tel: +34 902 027 020
Fax: +34 935 82 1 400

Asia Pacific
Hewlett-Packard Company
138 Depot Road
Singapore 109683
Tel: +65 6727 0777
Fax: +65 6276 3160

Latin America
Hewlett-Packard Company
5200 Blue Lagoon Drive
Suite 950
Miami, FL 33126
USA
Tel: +305 267 4220
Fax: +305 265 5550
informahpindigo@hp.com

Israel
Hewlett-Packard Company
Kiryat Weizmann
P.O. Box 150
Rehovot 76101
Israel
Tel: +972 8 938 1818
Fax: +972 8 938 1338

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