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INTRODUCTION

PURPOSE OF THE MANUAL
The purpose of this technical manual is to give you a better understanding of IDEM carbonless paper and to help you produce better quality business forms with less waste when using IDEM.

The IDEM Technical Manual is designed to satisfy your need for clear and easily retrievable information. The focus on applications, the split into sections, the use of graphics, and the photographs which accompany the text, we hope, make it a functional reference guide.

WHAT IS IDEM?
Idempapers, a private company, manufactures IDEM, the leading brand of carbonless paper in Europe and many overseas markets. The IDEM portfolio of carbonless paper products is one of the most extensive ranges of carbonless papers available on the market. Since 1973 the IDEM carbonless paper brand has been supported by constant research and development. The performance of all IDEM products is constantly monitored to ensure complete customer satisfaction.

THE ADVANTAGES OF CARBONLESS PAPER
- Time and cost saving: one print for several copies, low grammages equals lower postal costs and thin paper takes up less archive space.
- Organisation efficiency: coloured paper copies for easy filing and distribution, application specific forms through grammage, size, colour.
- Security: ‘Fraudproof’ – copies are recognisable, no transfer failures, easy numbering of sets and legal binding signature on both original and copy.
- User friendly: universal use – in and outside the office, both manual and machine imaging, possibility to add information at later stage.

THE IDEM PORTFOLIO
The IDEM family consists of 2 main products:

IDEM Superior:
The number one brand for fast, trouble free press performance; printing quality and excellent copy intensity throughout the set. Includes IDEM Superior Laser, a range of reel products specifically designed for usage on high speed copiers and laser printers.

IDEM Digital:
A range of carbonless paper specifically designed for the production of business forms on high speed copiers and laser printers.

IDEM Ancillaries:
Accompanying idep carbonless paper, idep offers a range of ancillaries specifically developed for idep carbonless paper
- IDEM Fanapart Adhesive, an easy-to-use and clean adhesive for the completion of self separating cut set.
- IDEM Desensitising ink, a secure solution when requiring specific areas of copy image to be hidden from view.
- IDEM CF Test Spray, a safe test that the desensitising ink has been correctly applied.
INTRODUCTION

HOW DOES IDEM WORK?
An IDEM copy is the reaction of two separate coatings under pressure (from a pen, impact printer, etc). One coating, CB (or coated back) consists of pressure sensitive microcapsules, containing colourless dyes known as colourformers, dissolved in an oil.
Under pressure, these capsules rupture, releasing the dyes, which are then absorbed by the second coating, CF (or coated front). The CF coating is a highly absorbent coating, which transforms the colourformers into a sharp, intense image.

There are 3 grades of IDEM paper:

CB  The original or top sheet of a multi-part form with a reverse-side, pressure sensitive coating, which transfers an image.

CFB  The pressure sensitive intermediate sheet(s) of a multi-part form, which both receives and transfers an image (the most sensitive sheet).

CF  The bottom copy of a multi-part form, which receives an image. Not pressure sensitive and can be handled as normal paper.
PACKAGING, STORAGE AND HANDLING
PACKAGING

Packaging is an integral part of the IDEM product offer. Combining excellent protection and respect for the environment together with strong branding, IDEM packaging ensures that the paper reaches you in pristine condition. Conscious of the importance of product labelling, all IDEM labels have been designed to convey the product details in the clearest and most informative way.

Reels

Reels are covered in stretch film. The packaging protects IDEM products from physical damage and moisture penetration and provides easy recognition of the paper tint. On pallets, the combination of a center pole, cardboard end disc and top cover, all secured by plastic straps, ensures complete stability and full protection. The reel label identifies the brand, grade, reel length and width, nominal weight, unwind direction and making number. Reel labels are peelable and should be kept in case of customer queries.

Sheets

The smaller sheet sizes in the IDEM range (smaller or equal to SRA3) are packed in shrink wrapped cartons and the larger sheets are wrapped in polyethylene (PE) coated kraft with top and bottom carton boards for .CB and CFB. This gives the reams full protection during transport, storage and handling prior to printing and finishing. The reel labels identify the brand, grade and product attribute, sheet size, grain direction, number of sheets or sets, tint and making number.

IDEM Digital A4 sheets are packed in unique single ream boxes with moisture barrier which ensures maximum quality is maintained. The single ream boxes make the product easier to handle, transport and store. The packaging is furthermore reusable for dispatch of the finished forms.
STORAGE

In its original pack and under normal conditions IDEM can be stored unprinted for a maximum of 5 years. IDEM is a paper whose coatings make it sensitive to both light and pressure. Like all coated papers it is more sensitive than standard bond paper to the relationship between temperature and relative humidity. These factors must be recognised when storing IDEM as printing problems can occur when there is an imbalance between the paper and the printing environment.

Light
The CB coating is photosensitive and will develop a colour on prolonged exposure to artificial light or daylight.

Pressure
Avoid excessive or localised pressure.

Relative Humidity
Paper is made of cellulose fibres so it will absorb or give up moisture when exposed to changes in the surrounding environment. When a fibre absorbs moisture it swells but not evenly in all directions. This can cause curl or waviness in sheets, ‘slack’ or ‘long’ edges in reels, and later cause poor printing results.

To minimise these effects, IDEM is made at a controlled moisture to preserve stability under normal operating conditions of temperature and humidity.

As many storage areas are not atmospherically controlled, remember:
- Keep IDEM in original wrappers for as long as possible.
- Store away from hot and cold areas (e.g. radiators, windows, direct sunlight).
- Allow IDEM time to attain the temperature of the print room before unwrapping (especially during winter).
- If unwrapped, do not store directly on the floor.

Reels
Stacking
For safety reasons it is recommended not to stack more than 2 pallet loads high. Stack reels on end (figure 6), not in a pyramid (figure 7).
PACKAGING, STORAGE
AND HANDLING

Sheets
To prevent damage the maximum stack height for CB, CFB is 2 metres (30 reams approximately). IDEM sheets must be given time to reach the temperature of the print room. It is essential that the paper is maintained within its moisture proof packaging until the equilibrium temperature is reached.

Conditioning of Paper
The following table gives a guide to the number of hours required to condition paper prior to printing. This table should be consulted when the paper has been stored at a different temperature to the printing press location.

Please note:
- The same times are required for increase or decrease in temperature.
- Times are only an indication and will vary with the rate of air circulation.
- Times will vary according to how reams are stacked.
- Outer reams will reach temperature quicker than reams in the middle of a stack.

APPROXIMATE TIME NEEDED TO TEMPERATURE-CONDITION PAPER

<table>
<thead>
<tr>
<th>Temperate difference between paper and press room (°C)</th>
<th>0.125</th>
<th>0.250</th>
<th>0.500</th>
<th>1.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time needed in hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
HANDLING
IDEM CB and CFB papers are pressure-sensitive so extra care must be taken in handling these grades. CFB damage can usually be seen in the print shop. However, CB damage cannot be detected at once and it may cause blacking only after collating with CFB or CE. This can lead to poor copiability on your customers’ printed forms.

Reels
- Avoid bumping or dropping reels (figure 8).
- Do not roll the reels across uneven surfaces (figure 9).
- Do not swivel reels on their edge (figure 10).
- Only up-end reels using a pressure absorbing material (figure 11).
- Clamps must be covered by pressure absorbing material or fitted with a pressure limiter (figure 12).

Centre-Core Lifting
It is recommended that centre core devices should only be used to handle IDEM reels if the devices are fitted with supplementary vacuum equipment. Centre core lifting equipment should in any event not be used to handle reels with a length in excess of 7,200m and reels under 240mm in width.

Sheets
Extra care should be taken in handling large size reams due to their weight.
The above table shows figures for unwrapped reels. It is reproduced here as a guide and is representative of actual production to ensure that the reel does not exceed your machine’s maximum diameter.
WHICH GRADES TO CHOOSE?
Selecting the right grade(s) for the makeup and production of business forms is an important part of forms design. The IDEM range of products offers a wide choice for all business form applications, to cover all important design considerations.

These will include finished form size, make-up of the form, number of copies required and how the form will be completed (e.g. impact printer, typewriter, by hand, credit card imprinter or electronic cash register).

<table>
<thead>
<tr>
<th>NUMBER OF COPIES (EXCLUDING CB TOP SHEET)</th>
<th>CFB43</th>
<th>CFB53</th>
<th>CFB60</th>
<th>CFB70</th>
</tr>
</thead>
<tbody>
<tr>
<td>PENCIL</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>BALLPOINT</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>ELECTRIC TYPEWRITER</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>AVERAGE IMPACT PRINTER</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

The figures indicated above depend on the make of machine, type of backing roll or writing surface etc. The figures are for guidance only and each application should be tested before use.
SOLID PRINTING
Should only be used on areas where no IDEM copy is required.

HALF TONE AND SCREEN PRINTING
Half tone and screen printing is an effective way to highlight certain parts of a business form and is often used on invoice applications (figure 13).

Satisfactory half tone and screen printing results can be achieved by following a few simple guidelines. To maintain good image intensity we recommend:

- Screen density up to 30%.
- Screen of up to 150 dots per square inch (60 dots per square cm) for offset.
- Choose an ink colour to give a good contrast with the IDEM copy hue.

MASKING OUT
For some applications such as data-mailers, you may not wish the image copy to be seen on specific parts of the form. There are two main ways to achieve this:

Desensitising
As an alternative to the traditional method of scramble printing on the CF surface (blocking out), IDEM Desensitising Ink can be used (figure 14).

Desensitising Ink is specially developed to prevent the chemical reaction between IDEM CB and CF coatings rather than acting as a physical barrier. The application is frequently used in medical and finance applications where confidentiality is sought, so certain information is only available to selected parties (figure 15).

<table>
<thead>
<tr>
<th>FIGURE 13</th>
<th>FIGURE 14</th>
<th>FIGURE 15</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Figure 13" /></td>
<td><img src="image2.png" alt="Figure 14" /></td>
<td><img src="image3.png" alt="Figure 15" /></td>
</tr>
</tbody>
</table>
FORMS DESIGN
CONSIDERATION

IDEM Desensitising Ink is available in 1kg tins.

The form designer should ensure that the area to be desensitised is not at the glued edge of the form as this will hinder self-separation.

Desensitising is not a complete guarantee of data confidentiality because of embossing effects, copy by contrast etc. Acceptability should be checked with your customer.

For further technical details see page 18.

Blocking Out
The image copy may be rendered illegible by printing a scramble pattern on the CF surface. Always use a dark coloured ink as close to the IDEM image copy hue as possible. Avoid the use of a solid block as copy could still be read by the “embossing” effect of the pressure applied.

PRE-COLLATED SHEETS
The IDEM Superior sheets range includes 2, 3 and 4 part reverse pre-collated sets in different sheet sizes. These sets are the perfect solution for applications where the printed information is the same on all parts of the set.

The IDEM Digital sheets range includes 2, 3 part straight pre-collated sets and 3 reverse collated sets. The use of straight or reverse sequences depends on the laser printer, the tray used and if it is simplex or duplex printing. The sequence required can be tested by laser printing 2 copier sheets marked A and B respectively in this sequence and checking the printed sequence:

- If the sheet marked “A” is on top your copier requires straight pre-collated sets.
- If the sheet marked “B” is on top your copier requires reverse pre-collated sets.

Benefits:
- Wide range.
- Always come in fixed numbers of sets per carton (nearest to 500 sheets).
- Are packed printing side up.
- Arrive in the correct sequence at the delivery, after one pass through the press.
- No collation required after printing.
- Ready for immediate gluing.
Of the two coatings which create the copy, one (CB) is pressure-sensitive, the other (CF) is an absorbent material. All coatings will have some effect on ‘on press’ performance. Care must be taken in the choice of plate material, type of blankets, fount solution and inks.

Most IDEM grades can be classed as lightweight i.e. they have a base paper below 50g/m². This means that machine settings should be as for lightweight paper. Wherever possible minimize pressure in all printing and converting processes. Excessive pressure could result in capsule damage.

OFFSET PRINTING

Machine Settings

- Use low to medium tack inks to avoid ink piling on the blanket. Particular care must be taken in the selection of reflex blue inks and inks containing fandal pigments.

- Choose clean blankets with a hardness of around 78° shore. We recommend using the compressible type of blanket. They have the advantage, due to their construction, of giving good ‘release’ from coated paper surfaces. No problems have been noted in compatibility between the surface material of offset blankets and the chemistry of IDEM.

- It is recommended that dampening of the plate be maintained at minimum levels consistent with keeping a good ink and water balance, and achieving adequate lubrication to give good release from the blanket. A fount pH of between 5.0 – 6.0 is best for IDEM surfaces. If alcohol based solutions are used, we suggest a maximum 15% by volume concentration of isopropanol. Systems working without alcohol are not known to create any problems, but some adjustment to the volume of fount solution applied to the plate may be necessary. Always adhere strictly to manufacturers instructions when mixing specific fount solutions.

- Waterless litho may give rise to problems associated with IDEM coatings and ink tack; consult your local IDEM Sales Office before commencing a production run.

- Set all guide rollers to minimum pressure and all drive rollers to achieve minimum tension.

- The usual practice is to start with no ink transfer and then to increase the pressure between the blanket and the impression cylinder up to a level where you start to see a good print quality. Avoid applying high impression pressures to compensate for surface faults on the blanket.
Crash Printing
Crash printing is carried out on a letterpress. By passing collated sheets or reels in the correct sequence under a relief plate with heavy impression pressure, a line of type will be printed and reproduced throughout the set. Numbering is accomplished by printing with an impact numbering box (figure 16).

Normal crash printing is suitable for up to five parts and can be a cost effective method of production. Use metal or hard polymer plates.

Printing with CF Spot Inks
Some applications, particularly 'hidden-entry' envelopes, require the printing of CF spot ink typically on the top side of CB56. Due to the range of CF spot inks available and the risk of reaction with the CB microcapsules to cause discoloration, we do not guarantee the use of IDEM with CF spot inks except those recommended or supplied by your local IDEM Sales Office.

Reverse-Side Printing
Reverse side printing is used to show additional information on the reverse side of a sheet, for example, the ‘terms and conditions’ of a contract.

- Printing on the CB surface of IDEM grades requires minimum pressure settings to avoid excessive damage to the coating and thus loss of copy quality.
- Ink film thickness should be kept to the lowest level possible to prevent the formation of a barrier between the CB coating and the CF below, thus reducing copy quality. For this reason we recommend caution in the use of UV curing inks which may become ‘fixed’ on the surface. It is preferable to use conventional ink, with the addition of 2-3% of oxidative dryers to stabilise drying.
- To further reduce the risk of inhibiting copy transfer choose fine line characters and have the most open spacing possible.
- Using light shades of ink, e.g. greys, light blues, greens etc, will reduce show-through of characters on the front side.
- Reverse-side printing of CF grades does not of course require the same precautions. However, we still recommend care in choice of ink colours and the volume of ink laid down.
Desensitising

Desensitising is achieved by using IDEM Desensitising Ink. This is a specially developed ink which prevents the chemical reaction between IDEM CB and CF coatings rather than acting as a simple physical barrier.

Preparation

- Desensitising can only be achieved by application to the CF coating of CFB and CF grades.
- Most negative plates are suitable. Exercise caution with positive plates.
- To test the suitability of a plate apply the IDEM Desensitising Ink on the developed image and leave for 24 hours. If the image is intact, the plate can be considered safe.

On Press

- All parts of the printing press should be clean, to prevent contamination from any residual inks, which could create unwanted impressions.
- Always print IDEM Desensitising Ink as the last ink laid down.
- Inking rollers must be clean and not made of polyurethane. Set ink ducts as for a solid area.
- Start with light inking and build up until successful desensitising is achieved. Ink weight of 2.0 to 2.5g/m² should be adequate.
- On continuous presses, the ink path should, where possible, minimise contact with the guide rollers.
- Covering rollers with a specially textured material will help minimise set-off and tracking.
- Settings and speeds have to be carefully balanced to avoid tracking and set-off from guide rollers, carriers, etc. Maintain an even level of ink in the ink ducts.
Control

- Test frequently for IDEM image development across the desensitised area by placing a CB sheet on top of the desensitised area and use a ball point pen against a hard surface at normal handwriting pressure. Examine the desensitised surface under magnification and preferably above a light table (or against a window). Wait at least 2 minutes before testing allowing the ink time to be absorbed (figure 17).

- If points are visible where an IDEM reaction has taken place increase ink film and re-test.

- When testing CFB it is advisable to place a CF sheet under the CFB as this will prevent an upward migration of CB from the reverse side which could give a false test result.

Do not alter press conditions (e.g. speed) without testing the effect of the change. IDEM CF Test Spray can be used to check that the Desensitising Ink has been printed in the correct position and for any set-off or tracking which may have occurred. The spray shows the extent of the area of coverage – by developing the surface where the ink is not present blue – as opposed to checking the efficiency of a deliberately desensitised area (figure 18).

IDEM CF Test Spray is available as an aerosol.

Please note:

- The spray does not check the efficiency of a deliberately desensitised area; it just shows the extent of the area.

- When using, follow the instructions on the CF Test Spray can.

- Always use IDEM Desensitising Ink without any additives.

- Standard printing inks which are overprinted by IDEM Desensitising Ink should be resistant to alkali and nitrocellulose varnishes.
PRINTING

PRINTING REELS

Web Length Control
- Carbonless paper being of low grammage can easily stretch under excess tension.
- The web length should be controlled once the machine speed is stabilised.
- Samples should be taken and measured after a few minutes, once the paper has reached equilibrium with workshop conditions and the mechanical tension is released (figure 19).

Winding Tension
In order to avoid discoloration or ink smudging (set-off), it is essential that the printed reels are not rewound too tightly.

UV Drying
Care should be taken when using IDEM Superior CB and CFB grades with UV ink drying systems.

Select lamp output and running speed to fully cure the UV ink but avoid using excessive UV drying to minimise the risk of reducing copy intensity.

The form set must be designed in such a way that large areas of print do not extend into areas which are subsequently to be used for copying. Any areas of the CF coating which are printed with UV drying inks will be considerably less reactive and a correspondingly inferior copy will result.
**Perforating and Punching**

The perforating and punching behaviour of IDEM grades is exactly the same as that of any other high-quality woodfree paper, however to avoid excessive wear we recommend toughened steel tools.

The setting of microperforating blades is more critical than for coarser pitch blades. It is suggested:

- That knives are adjusted according to the grade. There are significant thickness differences between CB-CFB and CF of similar grammages.

- That knives may need more frequent changing when perforating CF grades due to abrasion. Double bevel blades perform best.

Since microperforations have a lower tearing strength, we recommend the use of heavier papers (minimum 70g/m² if possible). Careful grinding of the knife teeth, which act on the edges of the paper will improve the edge tearing resistance.

The use of sharp punching tools is essential.

**Tinting**

A wide range of tinted grades produced on the paper machine are available in the IDEM range in CB, CFB, and CF. Alternatively IDEM can be surface tinted successfully if the supplier’s instructions are carefully followed. Always use inks from a recommended supplier. Both alcohol and aqueous based inks can be used. If alcohol based inks are to be used then ethanol is preferred due to its faster evaporation rate. Inks should be well mixed and not contain pigments.

Light tints should be used to ensure a good contrast between copy and background. Ink coverage should be light (maximum 0.75g/m²).

Rubber cylinders must be well adjusted to permit even application.

Take care to avoid the use of dirty inks, or inks applied unevenly as these can affect copy quality.

It is the printer’s responsibility to check that the tinting process has not affected copy intensity or fanapart performance. No guarantee of copy intensity or fanapart performance can be given on self tinted paper.
## SOLUTION FINDING - PRINTING REELS

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>DIAGNOSIS</th>
<th>SOLUTION(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor print quality?</td>
<td>All over dusting.</td>
<td>Reduce printing pressure.</td>
</tr>
<tr>
<td></td>
<td>Ink piling within printed area</td>
<td>Reduce printing speed. Use lower tack inks. Use compressible blanket. Use higher shore hardness blanket. Control pressure between blanket/impression cylinder. Minimise pressure.</td>
</tr>
<tr>
<td>Tinting / Toning?</td>
<td>Emulsified Ink</td>
<td>Use less water. Change ink.</td>
</tr>
<tr>
<td></td>
<td>Fount solution too acid.</td>
<td>Use buffering agents to reduce acidity.</td>
</tr>
<tr>
<td></td>
<td>Fount solution incompatible with ink.</td>
<td>Change ink or fount solution.</td>
</tr>
<tr>
<td></td>
<td>Inappropriate roller wash.</td>
<td>Change Wash.</td>
</tr>
<tr>
<td></td>
<td>Contamination by solvent or detergent.</td>
<td>Take care during washing.</td>
</tr>
<tr>
<td></td>
<td>Excess water/alcohol.</td>
<td>Reduce levels, wash-up machine and re-start.</td>
</tr>
<tr>
<td></td>
<td>CB coating debris in fount.</td>
<td>Reduce printing pressure.</td>
</tr>
<tr>
<td>Toning when printing CB side?</td>
<td>Too high a pressure between blanket/impression cylinder.</td>
<td>Reduce pressure to a minimum.</td>
</tr>
<tr>
<td>Length control mis-register?</td>
<td>Dimensional stability.</td>
<td>Compare dimension on the cross direction with the film. If OK, change tension on machine. If not, check ambient conditions, check if ‘plies’ printed at widely different ambient conditions</td>
</tr>
<tr>
<td>Slack edges?</td>
<td>Different length of web left/right</td>
<td>Turn reel around in printing press and check if problem is present on other side. If not, check printing press alignment. Check that reels not stored on damp floor.</td>
</tr>
</tbody>
</table>
PRINTING SHEETS

Offset Printing
Most cut sets are produced by the conventional wet-offset printing process. With this process it is possible to print as many colours as required on the IDEM sheets range.

IDEM Superior pre-collated sets are perfect for applications where the printed information is the same on all parts of the set (see also page 14).

Another perfect solution from IDEM is the same weight sheets (CB, CFB and CF) for the standard IDEM Superior product range to minimise adjustments between grades.

Letterpress Printing
With this printing process, impression pressure (particularly where metal or polymer plates are used) should be kept to a minimum to avoid premature rupture of the CB capsules. Avoid printing of large solid areas as the pressure involved can damage capsules.

Perforating, Punching and Die-Cutting
The IDEM sheets range can be perforated, punched and die-cut without any problems. Excessive pressure should be kept away from the CB-coating on IDEM CB and CFB. This is because capsule damage in this area could result in marking and/or copy performance loss.

SOLUTION FINDING - PRINTING SHEETS

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>DIAGNOSIS</th>
<th>SOLUTION(S)</th>
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<tr>
<td>Poor runnability?</td>
<td>Curl</td>
<td>Check ambient conditions to ensure printing environment not too dry. Store the paper in its original wrapping until just before printing. Ensure that the packaged reams have had sufficient time to equilibrate to ambient conditions of temperature and humidity. Check grain direction of sheets.</td>
</tr>
<tr>
<td></td>
<td>Sheets not separating (static).</td>
<td>Increase ambient humidity. Check earthing of printing press. Fit static eliminators.</td>
</tr>
<tr>
<td></td>
<td>Sheets welding together</td>
<td>Fan before use.</td>
</tr>
<tr>
<td></td>
<td>Paper not square.</td>
<td>Measure and check guillotine accuracy.</td>
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</table>
Digital printing

Most carbonless business forms are still printed by the traditional wet-offset process. However, there has been an emergence over recent years of digital printing technologies being used with carbonless paper to produce business forms entirely, or in conjunction with wet-offset, to increase personalisation etc.

These technologies, collectively referred to as digital printing, can be subdivided into the following technologies:

- Direct: e.g. Inkjet printing
- In-direct: e.g. Laser printing
- Transfer: e.g. Thermal transfer printing, dye sublimation
- Chemical: e.g. Thermal printing

Only the direct and in-direct technologies can be used in combination with carbonless paper.

Digital printing is used for economic short run print jobs, where a fast turnaround is needed or where variable data is required. The digital print market for carbonless paper is relatively small but is growing rapidly.

Sometimes DI (Direct Imaging) offset technology and digital duplicators are wrongly referred to as digital printing technologies. True digital printing is being able to have a different content on each sheet; this is not possible when using the DI technology or digital duplicators. However carbonless paper can be used successfully with both of these technologies.

Laser printing

Laser printing is based on the well-established electro-photography technology as first used in photocopiers. Laser printing technologies include high speed copiers and laser printers. An increasing amount of IDEM carbonless reels and sheets are being printed using laser printing technology.

IDEM Digital sheets are specifically developed for producing carbonless cut sets on photocopiers and laser printers. IDEM Superior Laser reels can be used without difficulty in combination with high speed laser technology. For more information on applications for IDEM Digital and IDEM Superior Laser Reels see page 38.

These product ranges have a number of key quality characteristics, which ensure satisfactory and consistent performance on all types of photocopiers and laser printers:

- A low moisture content to ensure no curl problems under the conditions experienced with these printers.
- No contamination of the photocopier drum by CB or CF dust.
- Surface characteristics which give good toner adhesion.
- No odour produced.
- Excellent runnability.

Normal Fanapart gluing with IDEM Fanapart Adhesive can be undertaken after paper has been processed through a photocopier or laser printer. It is recommended to let the paper cool prior to Fanapart gluing and to avoid using silicone based fuser cleaning oil. See page 38 for more information on applications for IDEM Digital and IDEM Superior Reels.
Hints and tips for laser printing

- Prior to laser printing, ensure that the paper (reels or sheets) is conditioned in its moisture-proof packaging to the temperature of the laser printing location.
- Although IDEM Digital Sheets and IDEM Superior Laser have been especially developed for usage on laser printers, in general the lower the fusion temperature the better. Problems experienced with too high a fusion temperature include curl, misregister, loss of copy and odour.
- Avoid laser printing on offset pre-printed areas.
- If not using all the paper in the laser printing process, ensure that it is not left unwrapped for any length of time.
- Do not leave the printed paper in the laser printer overnight.
- Make sure that the completed forms (cut sets and continuous forms) are wrapped in moisture-proof packaging for despatch to the end user. See page 38 for more information on applications for IDEM Digital Sheets and IDEM Superior Laser.

Hints and tips for offset pre-printing applications

- Always ensure that the paper is properly conditioned prior to printing. Allow sufficient time to condition the paper in its original packaging if it has not been stored at the same temperature as the printing press location. See page 8 for more information on conditioning of paper.
- Avoid using excessive fount solution.
- Keep ink coverage and ink weight to a minimum.
- Ensure that inks used are approved for subsequent laser applications.
- After printing, forms must be kept in a moisture-proof packaging.
- Make sure that the pre-printed paper (if the laser printing is done by the end user) is wrapped in moisture-proof packaging for despatch to the end user. See page 38 for more information on applications for IDEM Digital Sheets and IDEM Superior Laser.
Colour Digital Printing

Colour digital printing presses are relatively new and their use to produce business forms is not yet commonplace. Within colour digital printing the following technologies are being used:

- Electrophotographic, up to 7 colour, liquid toner system for example HP Indigo.
- Electrophotographic, a 4 colour, dry toner system for example Xeikon, Xerox Docucolor series and Kodak NexPress.

In many cases the equipment suppliers or your local IDEM Sales Office can advise on the suitability of printing carbonless paper. The following characteristics of IDEM should be borne in mind.

- The carbonless chemistry is susceptible to deterioration by either excessive pressure or heat, chemical fumes or solvent based materials.
- As a coated paper, carbonless paper can be affected by extreme changes in temperature.
- The surface coatings of carbonless papers are designed to give excellent results when printing with conventional printing inks. Toners and/or special inks can sometimes cause difficulties and we advise contact with your local IDEM Sales Office.

If in doubt or more specific information is required, please contact your local IDEM Sales Office.

Ink Jet Printing

Ink jet printing is widely used to print bar codes. The inkjet printer can be part of the continuous forms press or part of subsequent processing.

There are 2 main types of ink jet printers; continuous, as used for example, by Scitex on offset presses for barcoding, and drop-on-demand as is more common on desktop systems from Epson and HP.

The CF coated surfaces of IDEM Superior CFB and CF grades give satisfactory results when printed by inkjet.

The surface of the uncoated IDEM CB grades has not been specifically designed to accept all ink jet inks and therefore to avoid show through and tracking it is advisable to use the fastest drying inks available and heavier CB grades (minimum 80 gsm). Reducing the printing speed or using assisted drying such as an infra-red heater or convection fan heater can improve drying and reduce show through.

The binders used as part of the CB coating make the CB side unsuitable for ink jet printing. IDEM is therefore not guaranteed for ink jet printing on the CB surfaces of CB and CFB grades.
FINISHING IDEM SETS
FINISHING IDEM SETS

GUILLOTINING
Guillotining may take place prior to printing (for sheets) or as part of the finishing process (for cut sets). The same general principles apply. Use minimum clamp pressure with a pressure absorbing pad to avoid damage to the CB coating.

- Ensure the blade is sharp preferably with a bevel angle of 19°. This will reduce the amount of marking at the edge of the sheet.
- Keep height of stack to be cut to a minimum. Maximum recommended stack height is 500 sheets.
- Ensure the cutting stick is flush with the bed plate to avoid marking from upwards pressure (Figure 22).

IDEM FANAPART ADHESIVE
For the completion of self separating cut sets, such as purchase orders, invoices and transportation documents, always use IDEM Fanapart Adhesive – the only product guaranteed for the IDEM range of products.

The adhesive works on the principle of greater absorption between two coated surfaces. Where there are no coatings, such as between the under side of the CF and the upper side of the CB sheet, separation will occur to give individual sets (Figure 23).

IDEM Fanapart Adhesive is available in ergonomically designed, easy to pour, 2 and 5 litre containers, and comes complete with a vision strip that shows the amount of adhesive remaining.

Successful gluing and separation of cut sets cannot be guaranteed when IDEM grades are mixed with other brands of carbonless paper.
Instructions for use

IDEM Fanapar Adhesive does not rely on grain direction, the choice of edge to be glued can be determined by customer requirements, however all sheets to be glued must be of the same grain direction (figure 24).

- Preferably guillotine a skim-trim from the edge to be glued and have a margin of at least 3mm free of printing ink (figure 25).

- Align the stack carefully at the edge to be glued especially where the top or bottom sheets are heavyweight qualities.

- THE STACK HEIGHT SHOULD NOT EXCEED 30CM.

- A heavy weight to hold the stack down is unnecessary. Place a wooden board across the full width of the edge of the stack with a weight on top of it. Use a maximum 1kg weight for a 30cm stack. The purpose of the weight is to avoid the upper sets moving during gluing and not to compress the stack (figure 26).

- Use fresh adhesive.

- The adhesive is ready for use, but must be well shaken before use (figure 27).

- Apply sufficient adhesive using a flat, soft, clean brush of 50-60mm width. Two liberal coats should be applied wet on wet with horizontal strokes from the centre of the stack to the edges (figure 28). An extra coat (wet on wet) should be applied to sets with more than 3 parts or those containing boards.
FINISHING IDEM SETS

- At a temperature of 20-25°C the sets may be separated and moved after 45 minutes of drying although the glue will not be completely dry. To separate individual sets, fan the stack from bottom to top only (figure 29). If heaters are used to reduce drying time, they should not be switched on until after 10 minutes of natural drying.
- Ideal workroom temperature is 20-25°C and 50% relative humidity. Lower temperatures may retard the drying time of the adhesive. Low humidity may affect the bond strength achieved and should be avoided.
- The adhesive should be stored in cool light free conditions and the container stored closed.
- If further processing is necessary (e.g. crash numbering) leave 3-4 hours for full bonding.
- The adhesive is designed for use with conventional CB, CFB and CF set constructions. If different constructions are required please contact your local IDEM Office.

PADDED CUT SETS
Some cut sets may be finished as pads; conventional padding glues can be used.

GENERAL GLUING
IDEM can be spot, or line glued. As some adhesives can affect the copy intensity of IDEM, check with your adhesive supplier for advice.
**SOLUTION FINDING - FINISHING**

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<th>SOLUTION(S)</th>
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<td>Sets stick together?</td>
<td>Poor separation – blocking</td>
<td>Ensure correct collation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use IDEM Fanapart Adhesive.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduce weight applied on stack during drying.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduce quantity of glue on second coat.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ensure no more than 30 seconds between coats of glue.</td>
</tr>
<tr>
<td>Sets fall apart?</td>
<td>Poor bonding.</td>
<td>Use maximum 1kg weight for 30cm stack.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Apply more glue with first coat.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Allow longer natural drying time.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clean guillotine knife.</td>
</tr>
<tr>
<td>No copy?</td>
<td>Sheets upside down.</td>
<td>Check before printing and collating.</td>
</tr>
<tr>
<td></td>
<td>Wrong grade used.</td>
<td>Check collating sequence.</td>
</tr>
<tr>
<td>Poor copy intensity?</td>
<td>Damage to CB.</td>
<td>Compare with unprinted paper.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduce impression pressure to minimum.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use compressible blanket.</td>
</tr>
<tr>
<td>Discoloration?</td>
<td>Damage to CB.</td>
<td>Adjust pressure of lay on wheels or move to edges.</td>
</tr>
<tr>
<td>- Lines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discoloration?</td>
<td>Damage to CB.</td>
<td>Reduce blanket to impression cylinder pressure.</td>
</tr>
<tr>
<td>- Overall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discoloration?</td>
<td>Damage to CB.</td>
<td>Check for gutter/channel mark.</td>
</tr>
<tr>
<td>- Guillotine clamp marks</td>
<td></td>
<td>Check knife angle.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use softer clamp material...</td>
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USEFUL INFORMATION
USEFUL INFORMATION

COPY LIFE
Many carbonless forms must be stored in archives for more than 10 years for legal or tax reasons. Independent testing shows that under normal – dark and dry – archive conditions IDEM copies remain legible for up to 25 years.

Protecting the IDEM image during storage
Certain materials can affect the IDEM image, causing an unacceptable weakening of the copy intensity. In particular we warn against:

- The mixing of carbon papers or other carbonless papers and IDEM.
- Spot carbonising on IDEM.
- Contact with plastic materials especially plastic folders or folders containing plasticizers. PE folders rather than PVC folders should be chosen.
- Storage in areas exposed to high levels of chemical fumes.
- Mixing IDEM with the mechanical transfer style carbonless papers. Some of these products contain plasticizers which can affect copy quality.
- Long-term exposure to daylight or artificial light.

PHOTOCOPYING
(of IDEM copies)
Most modern machines give excellent results. The quality of the duplicate copies depends on the quality and clarity of the original.

COPY LIFE
IDEM copies can be put onto microfiche storage systems. The quality of reproduction depends on the reproduction level of the film used as well as the original contrast level of the copy.
IDEM SAFETY ASSURANCE
Careful selection and stringent toxicological testing of all materials used ensures that IDEM paper is safe to make, use and handle. In addition, samples of IDEM are regularly submitted to an independent research laboratory for evaluation. These investigations have confirmed that IDEM does not cause skin irritation or allergy.

No heavy metals are used in the manufacture of IDEM and, as such, it fully complies with the CONEG regulations.

IDEM also complies with REACH regulations and does not require registration procedures.

IDEM QUALITY ASSURANCE
Manufacture of IDEM carbonless paper is carried out under the ISO 9001 v2004 quality assurance standard.

IDEM AND THE ENVIRONMENT
As one would expect from the largest and most established European manufacturer of carbonless paper, Idempapers is committed both to meeting the needs of the customers and minimising any adverse impact of its processes and products on the environment. The IDEM mill comply to the ISO 14001 environmental standard. The environmental policy is constantly reviewed in the light of advances in technology and the understanding of environmental issues. A copy of the environmental policy can be found on www.idempapers.com

IDEM carbonless paper is made from pulps only produced from commercially managed sustainable forests. No tropical mixed hard woods are used. The pulp purchasing strategy is based on long-term partnerships with suppliers with a known respect for the environment IDEM carbonless paper is made from 100% elemental chlorine free (ECF) pulps.

The same care in the selection of pulps is taken for other materials such as coating pigments and binders. IDEM carbonless paper and its packaging is fully recyclable.
Applications Cross Reference Table
IDEM carbonless paper products can be used for many different applications. The table shows on which pages of this IDEM Technical Manual additional information on certain applications can be found.

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IDEM Digital and IDEM Superior Laser
IDEM Digital sheets and IDEM Superior Laser reels are specifically designed for the production of carbonless business forms on high-speed photocopiers and laser printers. IDEM Digital is ideal for the production of short runs of customised business forms and allows users to make their own forms on demand; quickly and easily. IDEM Superior Laser is the solution for carbonless business forms, which require additional information added via laser printer or copying, for example, personalisation and bar coding.

IDEM Digital and IDEM Superior Laser can be used for a wide range of applications:
- Drug trial forms, which are used to run field based drug evaluations. During the trial period individual personalised forms need to be filled in. More cost effective to produce via digital printing then via conventional offset litho printing (figure 30)
- Debit/credit forms.
- Delivery notes.
- Invoices.
- Internal forms are easily produced in small quantities on laser printers and copiers.
- Market research questionnaires.
- Order forms.
- Timesheets (figure 31).
- Transportation documents used in combination with custom made software, which allows the user to print the necessary variable information onto pre-printed digital forms (figure 32).
IDEM Superior OCR
IDEM Superior CB90 OCR and CF90 OCR are designed for applications requiring the reading by machine of characters printed with special Optical Character Recognition (OCR) inks such as credit vouchers. The papers conform to the base paper requirements of the APACS standard No 3 part 2 (CBS2) (figure 33).

IDEM Superior CF boards
IDEM Superior CF125 and CF170 provide thicker and stiffer alternatives to standard bottom sheets. This is ideal for applications which involve a lot of handling like transport documents or maintenance dockets for garages.

Folded CF boards can be utilised as covers for insurance or banking contracts and other similar applications.

CF boards also have a use when sets are bound in pads or folders – like, for example, forms for drug trials – when the extra thickness helps prevent transfer of details from the top set to the ones underneath.
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