



Data Services Division

Specifications for Laser-Compatible Print

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1 CUT SHEET

To supply preprint for our cut sheet Xerox laser imaging equipment, please follow these specifications:

Inks

Xerox laser printing systems are high-speed, high-heat systems; therefore:

- Inks must be wax-free, laser-safe inks.
- Aqueous or varnish coatings must be laser compatible.
- Mark the date of purchase on new cans of ink -- chemical dryers will evaporate over time, making the ink non-laser safe.
- Offset spray powder should be minimal.
- Avoid small quick print presses because fountain solutions may cause drying problems and ink-flow control values on small presses are not as fine-tuned as on larger presses.
- Blue inks, particularly reflex blue, need additional drying time. An infrared dryer may help cure drying problems. Inks will be exposed to a temperature of 405 degrees, and a pressure of 140 PSI.
- Ink coverage on gloss stock should be limited to 30% screen, above 30% risks toner flaking; reflex blue being the most challenging.

(See **Part 3 ADDITIONAL INK SPECIFICATIONS FROM XEROX** for more details on inks.)

Size

Minimum: 8 x 10

Maximum: 14 x 17

If the final flat sheet measures more than 14" on one side, the other side must be at least 10". If there is excess it will be trimmed off as waste. In the case of multiple up layouts, the waste should be positioned on either side of the flat sheet whenever possible, not between the pieces. Additional costs are associated with center trims.

Grain

Follow these guidelines for grain direction for more efficient throughput.

If the longest side of the sheet is 14" or less, grain direction should follow the long edge. If the longest side of the sheet is greater than 14", grain direction should follow the short edge. If a unique set-up is required, simply contact A.B. Data for help in determining the best grain direction for that project.

Examples: 8.5 x 11: grain long (11")
 8.5 x 14: grain long (14")
 11 x 12: grain long (12")
 11 x 14: grain long (14")
 11 x 17: grain short (11")
 14 x 17: grain short (14")

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Layouts

If the flat sheet is one up, cut it to the finished size. If the flat sheet is multiple up with no bleeds, layout the artwork for a chop cut. If the flat sheet is multiple up with bleeds, layout the artwork with a .25" gutter. On multiple up layouts, orientation of each one should be the same, and only one version should be laid out on each flat sheet.

Perforations

- Perforations must be 16 TPI (teeth per inch) minimum and must be letterpress perforated or micro-perforated
- Perforations must be clean (e.g. go all the way through the sheet)
- Perforating must be done from the front so the bumps (if any) are on the back of the sheet.
- Bumps created by perforating must be minimal -- no noticeable rise in a 3" to 11" stack of paper.
- Pattern-perforated sheets must be pre-tested.

Paper

A.B. Data has tested certain papers not listed in the manufacturer's guidelines and prepared a list of approved paper stocks that run well in the Xerox 4635 and DP 180 printers. Other paper or label stocks may work, but would require testing first (5,000 sheets are recommended for an accurate test). You will get the most value from our laser printers by selecting papers for their run-ability and print quality characteristics.

- Acceptable caliper is from .004" to .0095".
- Coated stocks:
 - Optimal moisture content is 4-6%. More than 6% creates steam and jeopardizes the quality of imaging and toner adhesion.
 - The duller the coating the better.
 - Avoid shiny chromecoate.
 - Use minimal powder
 - Avoid use of silicone on web presses.

Below is a partial list of approved paper stocks (some can be found in Xerox manufacturer's guidelines, others were tested/approved by A.B. Data):

Approved Text Stock

50#, 60#, 70#, 100# Offset

20#, 24# Bond

100#, 125# Tag

80#, 100# Mead, Sommerset, and Vintage Gloss Text

80# Silverado Matte Text

80# Sommerset Matte Text

100# Cougar Text

60#, 70#, 80# Finch Text

24#, 28#, 32#, 35# Ledger

90#, 110# Exact Edge Ledger

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Approved Cover Stock

7 pt. Uncoated return card

50#, 65# Antique Cover

57#, 67# Vellum Bristol

65#, 80# Plainfield Opaque, Wausau Bright White Uncoated Cover

65# Finch Cover

7 pt. Somerset Matte Cover

7 pt. Patina Matte Cover

80# Fortune Gloss Cover

Thickness

Minimum: 0.004" (20# bond)

Maximum: 0.0095" (e.g. 65# cover)

Papers that fall outside of these thickness parameters should be tested.

MICR materials

All MICR materials must meet a background color reflectance standard of a minimum of 60 percent as measured with Macbeth PCM-11 or Moore Model 082A equipment.

Packaging

Smaller quantities (1 skid of materials or less) should be packed in cartons and then placed on a skid.

- All labels on cartons must be clearly marked with quantity per box.
- Pieces must all face the same direction.
- Cartons must be convenient lift-able sizes.
- Use chipboard divider to keep two stacks separate if applicable.
- Carton must fit piece. Any excess space must be packed tightly to avoid shifting and possible damage of the stock.

Larger quantities (2 or more skids of materials) can be skid packed, but the skids must be prepared using the following specifications to ensure the integrity of the preprint:

- Use wood skids.
- Use ¼" plywood at the bottom of each skid to avoid ripples in the stock.
- Preprint should be layered in bricks of approximately 500 with each layer rotated 90 degrees. Cardboard should be placed between each layer. We recommend marking the cutter for consistency in count and brick height.
- All exposed edges of stock should be covered with protective corners
- The top should have a ¼" plywood cover and the entire skid should be secured with two metal bands in each direction. Stock from web presses is prone to ripples, so extra measures are needed to ensure flatness and keep moisture out.
- Once the skid is cornered and banded, the entire skid should be shrink-wrapped. Stock from web presses should also be covered with plastic.

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- The skids should be clearly marked with the quantity on all four sides, and a sample should be taped to the outside of the shrink-wrap or placed inside the shrink-wrap.
- The skid weight should be clearly marked.
- The appropriate number of cartons should be furnished with the printed materials for repacking after laser imaging is complete. If arranged in advance, A.B. Data can provide cartons for an additional charge. Please notify A.B. Data immediately if cartons will not be furnished with skid-packed materials.

Warehouse Skids

Prefer: Cut Sheet in Boxes = 40"W x 48"L x 54"H

Prefer: Continuous Rolls = 40"W x 48"L x 46"H

Minimum Length: 3'6" or 42" (to fit pallet racking)

Maximum Length: 4'0" or 48"

Maximum Height: 4'6" or 54" for boxes/cut sheet;

3'10" or 46" for continuous (standing up) rolls

Maximum Width: 3'8" or 44"

2 CONTINUOUS

To supply preprint for our continuous form InfoPrint 4100 laser imaging equipment (roll or fan-fold), follow these specifications:

Production Art Files

Electronic artwork required on all forms, in PDF format.

General Capabilities

Simplex and duplex; 480 and 600 dpi

Form Width

Minimum: 9" (includes pin feeds) Maximum: 18" (includes pin feeds)

Minimum Image Area: 8" Maximum Image Area: 17"

Form Depth

Fan-Fold

 Minimum: 7" Maximum: 14"

Roll to roll

 Minimum: 3" Maximum: 28"

Label Forms

 Box to roll or roll to roll, maximum: 25"

Fan-Fold

Include perforations at fold. Maximum stack height: 14"

Rolls

Core Size: 5" or 6" (5" is preferred)

Maximum O.D.: 48" (40" is preferred)

Wound: Varies depending on form layout and lettershop processes (ask your Account Executive). A diagram is provided on page 16 for reference when you speak to your Account Executive.

Packaging: Rolls must arrive standing, on end or roll off (not stacked pancake or poker chip style), on skids and banded with chucks/wedges. Shrink wrapping is also recommended.

Paper

Pin feed paper required.

The InfoPrint 4100 printing system is designed to process paper with a weight of 18 to 27 pounds (68 to 107 gsm). Some capacity is available for paper up to nine thousandths of an inch thick (see Heavyweight Paper section on the next page).

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Validation test runs are necessary for lighter papers – 16 to 18 lb. (60 to 70gsm), and heavier papers 27 to 43 lb. (100 to 160 gsm).

Validation test – approved paper
28# Ledger and 70# Offset

Heavyweight Paper Some capacity is available for heavyweight paper -- nine thousandths of an inch thick (9 point), uncoated or coated with a matte or glossy finish. Thinner stocks may also be used, such as eight point or seven point.

This option is not based on weight, or any single property of the paper. The coating, smoothness, and content of the paper are all key to the solution. It does not provide universal support for any equivalent weight paper. Holes or labels and cards attached to the form may prevent its ability to feed properly. Printing on preprinted or varnished areas will have degraded fuse quality, depending on the screen density of the ink.

The paper characteristics supported are:

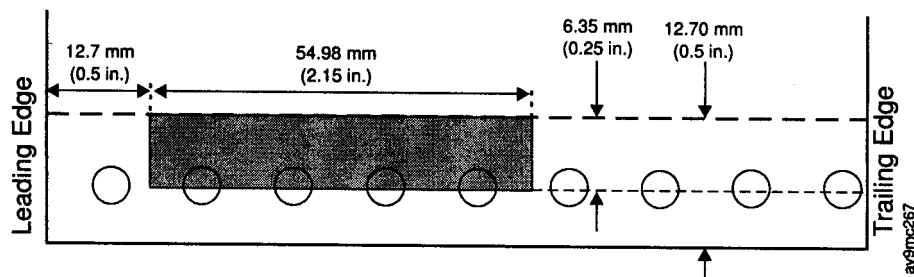
- Basis Weight = 152 pound text, offset, or book = 61 pound bond/225 gsm maximum
- Finished Weight (with ink and varnish) = 157 pound text, offset, or book = 63 pound bond/233 gsm maximum
- Caliper = 0.0092 inches, maximum
- Porosity = 80 through the Gurley measurement system using mercury
- Smoothness = 2.5 Parker print surface rating
- Description = Coated freesheet (free of groundwood), matte or gloss finish

Standards for Clear Zones

Clear zones are reserved areas that should contain no printing. This clear zone area must be maintained for printing **side verify marks**, which are used to ensure front-to-back (duplex) or page-to-page registration. It must also be maintained on preprinted forms that contain **forms identification bar codes**.

Clear Zones for Side Verify Marks on Tractored Forms

In the default configuration for tractored forms, the clear zone starts 12.7 mm (0.5 in.) from the leading edge of the form in the process direction and it must measure 54.98 mm (2.15 in.) in length and 6.35 mm (0.25 in.) in width.



Top of Form Mark

Top of form mark ¼" in length and not more than ¼" from the edge of paper is helpful, but not required.

Perforation Strength

Internal perforations should be stronger than fold perforations; otherwise, misfolds may occur. For internal perforations, use at least:

- 4.7 cuts per cm (12 cuts per in.)
- 0.81 mm (0.032 in.) tie length.

Requirements for perforation characteristics vary according to perforation type:

Perforation Type	Tensile Strength	Tie Minimum	Cut Maximum
Page Perforation, Folded	0.7 to 2.5 kN per linear meter (4 to 14 pounds per linear inch)	0.8 mm (0.03 in.)	3 × tie-length
Page Perforation, Nonfolded	0.9 to 2.7 kN per linear meter (5 to 15 pounds per linear inch)	0.8 mm (0.03 in.)	3 × tie-length
Internal Perforation, Vertical ¹	0.7 to 2.5 kN per linear meter (4 to 14 pounds per linear inch)	0.8 mm (0.03 in.)	3 × tie-length
Internal Perforation, Horizontal ²	0.9 to 2.7 kN per linear meter (5 to 15 pounds per linear inch)	0.8 mm (0.03 in.)	3 × tie-length

Notes:

1. Internal vertical perforations must be at least 50.8 mm (2 in.) from page perforations and at least 25.4 mm (1.0 in.) from form edges to prevent form breaks and jams.
2. Internal horizontal perforations must be at least 50.8 mm (2 in.) from the top and bottom page perforations to prevent errors.

Running Perforations (perf along pin feeds)

Forms with running perforations are not recommended for use with continuous forms printers. If you choose to use forms with running perforations, the running perforations should be along both vertical edges. Forms with running perforations along only one edge may cause errors.

Recommended form length and weight with perfs

Using forms that fit these criteria will ensure reliable operation, as well as reliable stacking for fanfold forms in simplex.

Page Length		Form Weight		Maximum Horizontal Perforations	Maximum Vertical Perforations
mm	inches	g/m ²	pounds		
76.2 to 139.7	3.0 to 5.5	60 to 72	16 to 19	Not Recommended	Not Recommended
		75 to 160	20 to 42	Not Recommended	3
152.4 to 165.1	6.0 to 6.5	60 to 72	16 to 19	1	Not Recommended
		75 to 160	20 to 42	1	3
177.8 to 355.6	7.0 to 14.0	60 to 72	16 to 19	1 (see note)	3 (see note)
		75 to 160	20 to 42	2	3

Note: One horizontal or up to three vertical perforations can be used. Thoroughly test the forms for reliable operation before using them for production jobs.

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Packaging

Cartons used for shipping forms should contain top and bottom packing to hold the stack of forms firmly in the carton and to prevent damage during handling. This ensures that forms are flat and not damaged at the edges or folds. Avoid using forms with partial breaks in perforations or manufacturers' splices within the forms.

Cartons should be tightly closed with no open edges that could allow the forms to absorb moisture unevenly.

Rolls must arrive standing, on end or roll off (not stacked pancake or poker chip style), on skids and banded with chucks/wedges. Shrink wrapping is also recommended.

Paper Quality

Bond paper that is made from at least 80% chemical wood pulp is recommended. Experience also indicates that some papers with 25% cotton content are satisfactory. Some recycled papers are satisfactory.

Recycled paper should conform to the fiber content characteristics (80% chemically pulped wood), and in all other ways conform to the paper quality recommendations. In addition, recycled paper should be free of any contaminants that may have been added to the paper in its previous application.

Coated paper and paper with a waxy surface can cause fusing failures.

Embossed paper may cause wear on printer components, such as photoconductors and fuser rolls, and may reduce print quality.

Paper containing synthetic resins, synthetic sizing agents, or plastics may cause fusing failures.

Moisture in forms can cause differences in the fuse grade quality and the final print appearance. The range of 3.7% to 5.3% moisture content, by weight, is best.

Paper Weight and Thickness

Basis weight recommendations:

Media	Simplex/Dual Simplex	Duplex
Paper	16 - 42 pounds(60-160 g/m ²)	16 - 28 pounds(60-105 g/m ²) Some capacity for 28-42 pound.
Labels (heaviest part of label)	54 pound	Not supported

Forms Dimensions

Dimension	Minimum		Maximum	
	mm	inches	mm	Inches
Width (Duplex)	229±3.0	9.0±0.118	457 ±4.0	18.0 ±0.157
Width (Dual Simplex)	204±3.0	8.0±0.118	457 ±4.0	18.0 ±0.157
Length	76.2 ±0.3	3.0 ±0.013	356 ±0.3	14.0 ±0.013 (fanfold) ¹ 28.0 ±0.013 (roll) ²
Fold Spacing	178 ±0.3	7.0 ±0.013	356 ±0.3	14.0 ±0.013
Notes:				
1. Maximum form length is 28 ±0.013 in. with pre and post processing devices (roll to roll) for paper.				
2. Maximum form length is 25 ±0.013 in. with pre and post processing devices (box to roll or roll to roll) for labels.				

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Smoothness

Smoothness is the evenness of the surface of the form. Rough forms tend to cause variable print darkness, loss of fine lines, and poor toner adhesion. Forms that are too smooth may cause jams in the printer.

Form smoothness is a function of:

- The type of material used to make the form
- The processing of the material

For best operation of continuous forms printers, the smoothness of the form should be between 70 and 150 Sheffield units; (70 to 220 Bendtsen units).

Form smoothness:

Type	Recommended Smoothness * (Sheffield Units)	Typical Application
16 pound high-bulk bond paper	200 +	<i>Not Recommended</i>
16 or 18 pound high-bulk bond paper	70 to 200	Internal Reports
20 pound bond paper	70 to 200	Internal reports
20 pound bond paper	70 to 150	Statements/proposals Invoices/bills
20 pound specialty paper	70 to 120	Quality documents
28 to 42 pound bond paper	70 to 120	Direct mail application
<ul style="list-style-type: none"> • Smoothness less than 70 Sheffield Units is <u>not</u> recommended for any weight form. <p>Note: Test the form selected for each application using the appropriate application before ordering large quantities of the form.</p>		

Summary of Form Selection Recommendations

InfoPrint Solutions (formerly IBM) recommends using 75-g/m² (20-pound) continuous form bond, and that you initially test a small sample of supplies in your continuous forms printer before you purchase production quantities for a given application.

Forms Selection Recommendations – Summary

Parameter	Recommendation
Basis Weight (Preferred)	20 pound (75 g/m ²)
Acceptable Basis-Weight Range	16–42 pound (60 g/m ² –160 g/m ²) for simplex and duplex applications
Caliper	0.0032 – 0.0079 in. (0.08 – 0.20 mm)
Stiffness (Taber)	17–19 pound (64–72 g/m ²) Machine direction: 1.2 Taber units Cross direction: 0.5 Taber units
Coefficient of Static Friction	0.45–0.65
Porosity (Gurley)	10 sec/100 ml minimum
Fiber Composition	80% chemical wood pulp or wood-free pulp (The European term <i>wood-free pulp</i> is synonymous with the American term <i>chemical wood pulp</i> either sulphite or kraft).
Color	White or pastel colors
Ash Content	18% Maximum
Filler	The amount and type of filler should be chosen to produce a paper that has low abrasive and dusting characteristics. In general, low filler percentage and small particle size are best.
Surface Sizing	Starch
Internal Sizing	Acid rosin or synthetic (alkylketene dimer or alkenyl-succinic anhydride)
Moisture Content	3.7 – 5.3% (or 3.7% to 6.2% for Infoprint 4000 models with the High Humidity Feature RPQ # 8B4291 installed) (see note 6)
Surface Resistivity	1x10 ¹⁰ – 1x10 ¹² ohms (see note 6)
Chad	<25 loose chads per 2500 feet of forms; no hanging chads (all holes fully punched). No agglomerated chads.
Paper Formation	The paper should be uniform in appearance when it is viewed by holding a light source behind the paper.

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General Recommendations

Continuous forms printers accept a variety of inks and papers for preprinted forms. When ordering preprinted forms, specify that the forms are intended for use in an InfoPrint continuous forms printer. In addition, the following requirements and recommendations can help you use preprinted forms more effectively and help maintain reliable printer performance:

- The inks and papers that are used in preprinted forms must not emit vapors into the environment at levels that create an industrial hygiene safety exposure.
- Inks with phthalate esters in any concentration should not be used.
- Penetrating inks with high residual amounts of petroleum-based solvents should not be used.
- The inks must not contain any metallic or organic additives that either significantly affect print quality or constitute a health hazard when they are processed by a continuous forms printer (for example, a high titanium content).
- The forms must allow toner to adhere to the paper.
- The forms and preprinted information must not interfere with the normal function of paper path sensors.
- Brightening agents such as titanium should be avoided, especially at high levels to avoid print quality and fusing problems.
- *Clear zones* are reserved areas that are used for side verify marks and forms identification bar codes on preprinted forms. If you are using side verify marks (required for duplex printing), a clear zone must be maintained for printing the marks; these marks ensure front-to-back registration and page-to-page registration. Another clear zone must be maintained when using preprinted forms that contain forms identification bar codes.
- The forms must be printed with heat-resistive inks that are formulated to withstand the fusing temperature and the mechanical action of the printer.
- Ultraviolet (UV) inks are recommended for optimum overall performance. UV inks cure faster and are less likely to transfer to the printer hardware.
- UV inks and soy-based inks should be screened to a level of 50% to reduce the chance of printer contamination.
- After preprinting, allow sufficient time for the ink to cure (dry) before processing the forms. A minimum of 72 hours is recommended. Some inks with different formulations may require additional drying time. If inks are not cured correctly, they will transfer to the components — especially in the fuser area — causing print quality problems, premature parts replacement, and added maintenance.
- The final forms design should be tested on a continuous forms printer to verify that the layout is accurate and that the paper and ink are compatible with the printing process.
- Select paper with pH (hydrogen-ion concentration) for correct ink curing, based on ink and printing conditions.
- Avoid using paper that is smoother than 70 Sheffield Units.
- Avoid preprinted forms that are embossed or thickened.
- If tinting inks are used, enhance fusing quality by screening, or leave the area uninked where the continuous forms printer will print.

- Avoid solid preprinted areas on forms, particularly reverse headings, and logos. To decrease the amount of applied ink, screen the deeper-hued ink to obtain the desired color. These areas can usually be screened to 50% or less without losing their identity.
- Avoid vertical lines. They are more susceptible to ink transfer than horizontal lines. If vertical lines cannot be eliminated, screen them, if possible.
- Store forms within the environmental limits (temperature of 65 to 75°F and 40% to 60% relative humidity) to allow the best drying and curing of the ink. Also, do not use a moisture barrier around cartons during the ink-curing period.

Prepunched Forms

The following considerations apply to the location and size of binder holes and corner cuts in forms used with continuous forms printers:

Type of Cut	Dimension		Area		Number per 76 linear mm (3 linear inches)
	mm	inch	mm ²	Inch	
Binder Hole Diameter	6.35	0.250	31.61	0.049	3
	7.94	0.310	49.68	0.077	2
	9.52	0.38	70.97	0.110	1
Corner Cut, Triangular	9.5 x 4.8	0.380 x 0.190	22.58	0.035	4
	12.7 x 6.35	0.50 x 0.25	40.00	0.620	2

Colors

A continuous forms printer can process forms of light-pastel colors such as blue, buff, canary, goldenrod, green, pink, and salmon. All printing by a continuous forms printer is black. Dark paper colors may interfere with operation of the sensor that detects forms jams and the sensors that check for proper steering of forms through the forms path if the colors are in the tractor strip area.

Address Labels When supplying preprint for name and address labels (delivery point barcode), follow these specifications:

PSL 3.4 x 1 inches, four across (12" fan folded continuous stock)

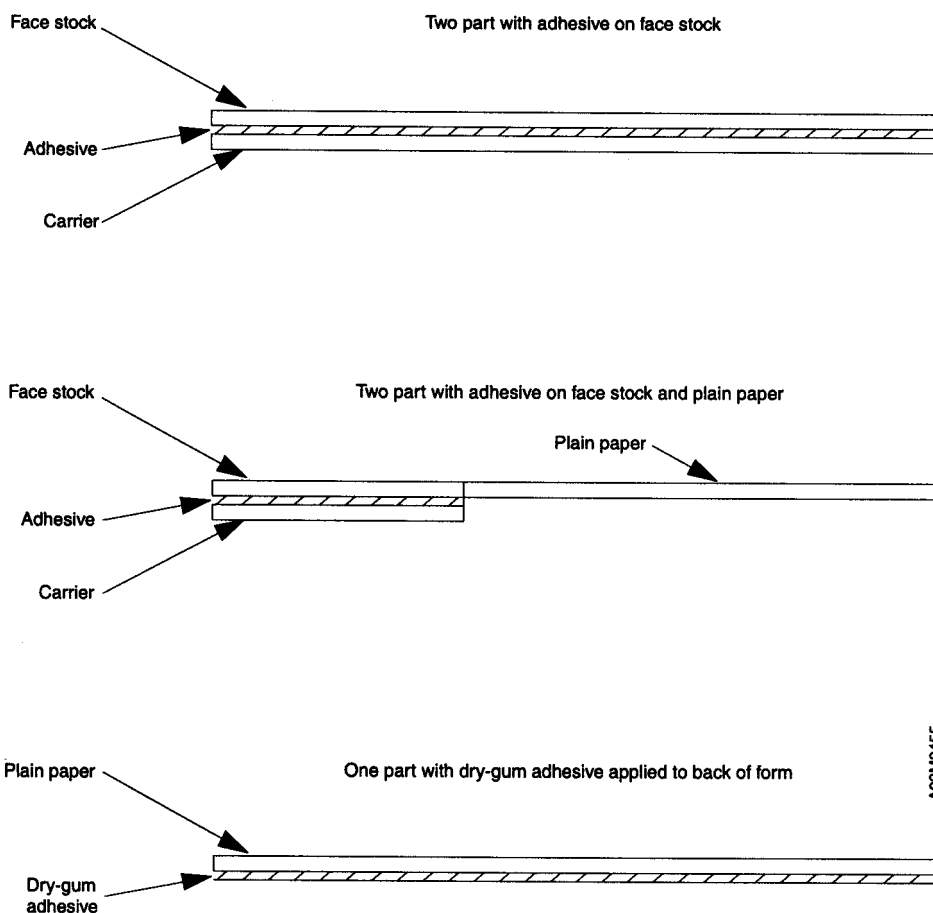
Cheshire 3.4 x 1 inches, four across (12" fan folded continuous stock)

All Labels

Printable labels vary widely in their weight, construction, and adhesive. **Because of this, label applications require thorough testing** before ordering production quantities. These applications require more operator support than standard applications.

Note: Adhesive labels are **not** supported for duplex applications.

Label Types The following diagram describes the typical types of labels used on continuous forms printers. These labels must meet the requirements set forth in this document.



Label Design Requirements

Labels must withstand a temperature of 204°C (400°F) and $3.4 \times 10^5 \text{ N/m}^2$ (50 PSI) while passing through the fuser station. The labels must withstand a continuous temperature of 138°C (280°F) while they sit on the preheat platen when the printer is not printing.

Labels must be placed no closer than 1.27 mm (0.05 in.) to the top or bottom page fold.

The label must be able to form around a 44 mm (1.75-in.) radius at a 180° angle without detacking.

The label must have a minimum release value from the carrier of 40 grams/inch (180° peel at 25 feet/minute).

Adhesive must not be left on the carrier after removing the matrix.

Die cuts and internal perforations must not allow adhesive to ooze to the label surface.

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Adhesive Permanent, removable, or dry-gum adhesive must meet temperature, pressure, and static requirements. The dry-gum adhesives must not abrade (scrape or rub) off the form and deposit on printer components.

Face Stock Selection The face stock can be paper or other materials. When selecting the face stock, remember the temperatures and pressures previously mentioned.

Because of the low melt point of vinyl materials, their use is not allowed in a continuous forms printer unless they can meet the temperature and pressure requirements.

Face Stock Paper Paper used in a continuous forms printer must be fanfold (boxed) or roll-feed, continuous-form bond. The accepted definition of bond is paper that is formulated from 80% chemical wood pulp. Characteristics of this type of paper are normally within the ranges that work best in a continuous forms printer. However, experience indicates that papers with 25% cotton content are satisfactory.

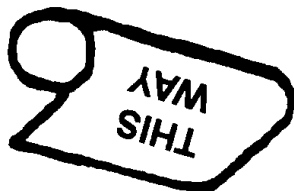
Carrier Material Carrier material must be compatible with the mechanical and thermal conditions present in a continuous forms printer.

Basis Weight and Thickness The total basis weight for the face stock, adhesive, and carrier must not exceed 25 kg (54 pounds), which equates to approximately 500 sheets of 432 mm x 559 mm (17 in. x 22 in.) paper. The total thickness for the face stock, adhesive, and carrier must not exceed 0.2 mm (.0079 in.).

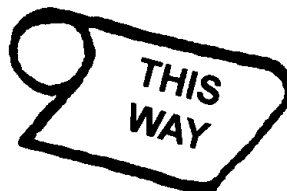
Smoothness To obtain effective toner transfer and fusing, the Sheffield smoothness must be between 70 and 150 units.

Roll pre-print direction chart: – prefer #1 and #4.

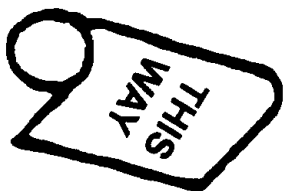
1. Head on first, face wound out



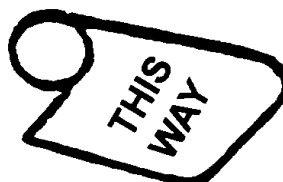
2. Foot off first, face wound out



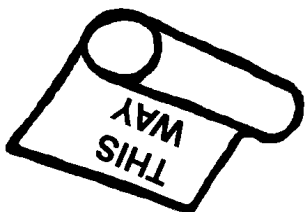
3. Right side off first, face wound out



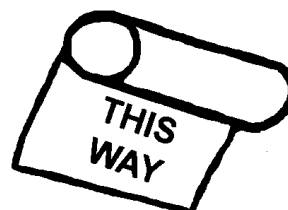
4. Left side off first, face wound out



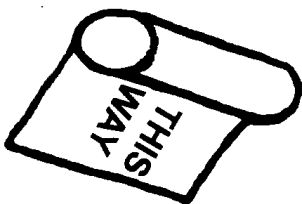
4. Head off first, face wound in



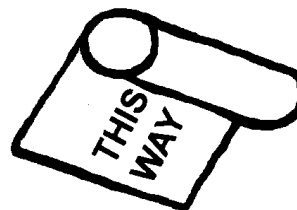
6. Foot off first, face wound in



7. Right side off first, face wound in



8. Left side off first, face wound in



3 ADDITIONAL INK SPECIFICATIONS FROM XEROX

PRE-PRINTING INK REQUIREMENTS FOR FULL COLOR OFFSET PRIOR TO IMAGING ON HIGH VOLUME XEROX PRINTERS

FOR BEST PRINTING RESULTS

For best results when preprinting documents that will be used in a laser printing system:

- Utilize the services of a printer experienced in producing documents to be used on laser printers.
- Make certain that the preprinted material meets all specifications for your Xerox printer as outlined in the appropriate operator guide.
- Use Xerox media qualified and guaranteed to perform in both offset and laser environments.
- Use oxidative or UV-cured ink.
- Use a minimum amount of water. Residues in the paper can dissolve in the fountain solution; this can interfere with the ink drying process.
- Avoid the use of Gum Arabic; this can disturb the paper's electrical properties, leading to poor image transfer.
- Avoid the use of sprayed-on drying agents on printed sheets (sometimes used as sheets exit the printing press in an effort to speed drying and set the ink, thus reducing the likelihood of sheets offsetting onto one another). These agents can contaminate the printer, resulting in background spotting/streaking, deposits in the fuser system and spots on the photoreceptor.
- Allow documents to dry for at least 48 hours.
- Control the printing environment to 68-76 degrees F, 45-55% RH.
- Pretest the document in your printer before ordering large quantities.
- Rewrap the printed sheets in moisture-proof wrappers as soon as possible, using minimum pressure when shrink wrapping.

What You Should Know About Printing Inks When Preprinting

Choosing the correct ink is the first step in designing documents that will function well in Xerox printers. Documents to be used in Xerox printers must be printed with inks that cure well, are not tacky, and do not offset (transfer from the printed sheet onto other surfaces). In choosing ink, the document printer must consider the conditions to which the documents will be exposed while passing through the printer, taking into consideration the amount of heat and pressure, as well as the dwell time during which the preprinted paper is subjected to these conditions.

Laser inks, or inks formulated specifically for use on documents that will pass through laser printers, are a recent development that holds considerable promise. These inks cure promptly (usually within 24 hours) and are formulated with laser printer conditions as a design criterion. They can be expected to reduce offsetting and other problems encountered with other types of inks. Laser inks may be oxidative, UV, or heat set types.

Special care must be taken to ensure that documents preprinted for use in the 4135 family use inks that do not offset. Work closely with the commercial printer to verify that requirements are understood and met. Always test the application on the appropriate printer before running production.

The liability for selecting inks and papers that perform acceptably in Xerox printers rests with the customer and the commercial printer. Printer damage, and/or higher than normal service cost (parts and labor), may result if these recommendations are not followed; these costs may be passed on to the customer if the inks and/or non-Xerox branded papers are determined to be the cause.

It is essential that customers use Xerox branded papers, whose performance is guaranteed if used with the correct inks. The same guarantee should be expected of the commercial printer chosen by the customer.

Printing inks are also exposed to fuser oil or lubricant during the xerographic printing process.

This information will assist your commercial printer in selecting ink that works well on both the printing press and in the Xerox printer.

Inks to Avoid

The following types of ink are not recommended for use in Xerox printers. If special applications require their use, proceed with caution, test before beginning production, and follow the suggestions set out below.

- Coldset inks **should never be used** in the 4135/4635/4635MX/Docutech96/Docutech96MX, or the DP180 family where the probability of offsetting is high.
- Conductive inks usually contain either carbon blacks or metal powders. Conductivity-related print quality problems can occur with documents preprinted using these inks. If a document is printed solid black or solid metallic on the backside, it may not hold sufficient charge for good dry ink transfer. Problems may be reduced or eliminated by trying one of the following:
 - Use different inks of the same color.
 - Replace some of the carbon black with combinations of other dark pigments.
 - Lower the ratio of metal particles to binder in the ink.
 - Use a more insulative ink binder.
- Redesign the document to include a break in the solid area around the edges of the sheet. Additional continuous breaks will also help. The idea is to break up the large conductive solid areas via non-conductive “fences” to improve overall charge retention.
- Rubber-based inks should not be used in the 4135, 4635, 4635MX, Docutech96, Docutech96MX, or DP180 family. They can cause printer contamination,

necessitating a service call. Use them with caution in other Xerox printers. Oil-based inks are usually preferable.

Drying Agents

Various kinds of materials are sometimes sprayed on printed sheets as they exit the printing press in an effort to speed drying and set the inks, thus reducing the chance the sheets will offset onto one another.

These materials-typically powders such as starch, talc, and rosin-can become contaminants when carried into your Xerox printer. This results in background spotting/streaking, deposits in the fusing system, and spots on the photoreceptors of laser printers. Avoid purchasing documents that have been sprayed with these materials.

– THE REQUIREMENTS IN PART 3 WERE FURNISHED BY XEROX.