Envelope Printing Tips

The media selected for a specific print job plays an important role in delivering high quality results. In addition to the general quality of the media (texture, weight, composition), the physical design and construction of an envelope must be taken into consideration in striving to achieve optimum print quality.

This document highlights common envelope styles and the challenges imposed. In some cases, the envelope's composition and construction may limit the type of graphic artwork and/or the positioning of the content for that envelope style. Some envelopes should be avoided altogether.

Envelope Styles and Considerations

Examples are given for standard business envelope (Com-10) but the details covered apply to other sizes.

Side Seams

Generally, the preferred envelope design for laser-type printing. Provides a large surface area uninterrupted with folds and seams.
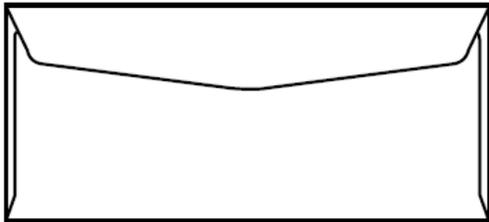

Diagonal Seams

Available in a wide variety of designs and fold patterns. Economical.
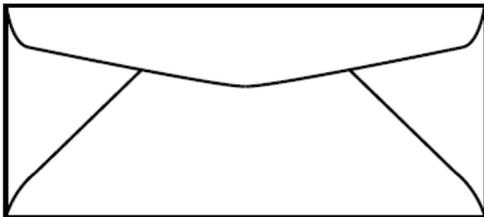

Window

Window envelopes must be "laser" compatible. The clear window must be able to withstand the high temperature of the printer's fuser. Misuse will damage the fuser.
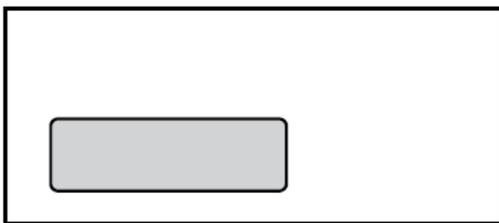
Peal and Stick Sealing

Often includes premium quality media and good results.
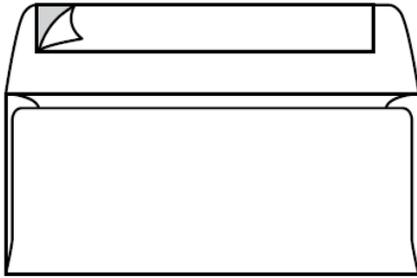
**2-sided Adhesive Pressure Seal**

DO NOT USE
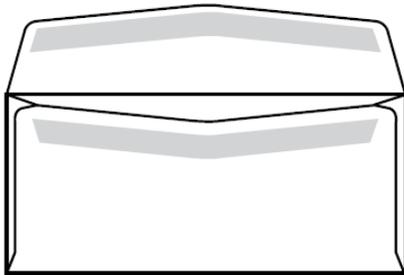
Envelope Design Considerations

When selecting envelops, be aware that the physical design and quality of the envelope may impose limitations on print quality and/or handling.

Envelopes can be a challenge because of the multiple surfaces passing through the printer. For example, most envelopes require the printer to transfer toner onto a surface that has 2, 3 and 4 layers of thickness.

A typical envelope will have 4 layers of media in multiple locations when it's flaps are closed. In the illustration below, the blue circles indicate the location where 4 layers of media overlap on two different envelop designs.
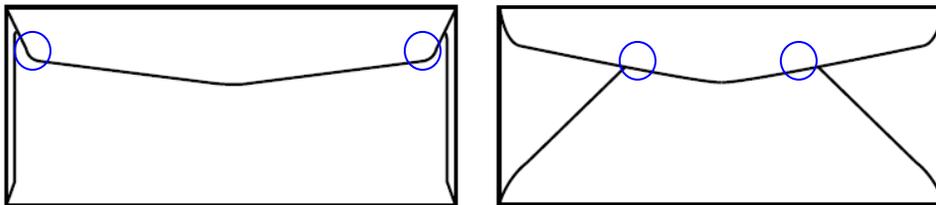
Generally, the printer is capable of transferring toner on thick media. However, testing has found that the location of the overlapping layers may create pressure points in one area which yield a void of pressure in other areas of the envelope. This is illustrated in the next section.

Testing and Selecting Envelopes

Knowing the limits of an envelope is helpful in paring the right envelops with a client's requirements. A simple test using Microsoft Word may help to identify envelopes that could be problematic.

Basic Steps for Creating Test File:
- Open MS Word and create a new document.
- Change the paper size to match your envelope
  - Click on: File - > Page Setup -> Paper (tab). In this case Com-10 was selected as the paper size. However, a custom size can also be specified.
  - On the "Margins" tab select "Landscape" and close page setup.
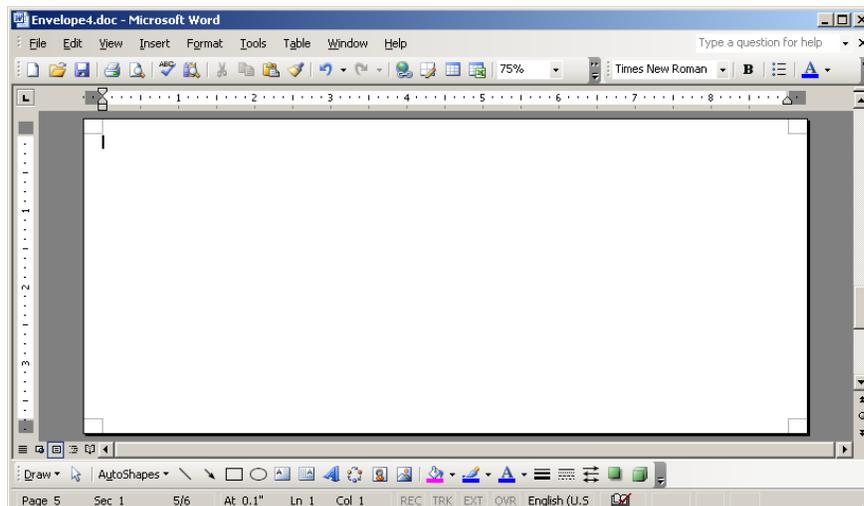
Draw a rectangle allowing 0.3 inch for the margins.
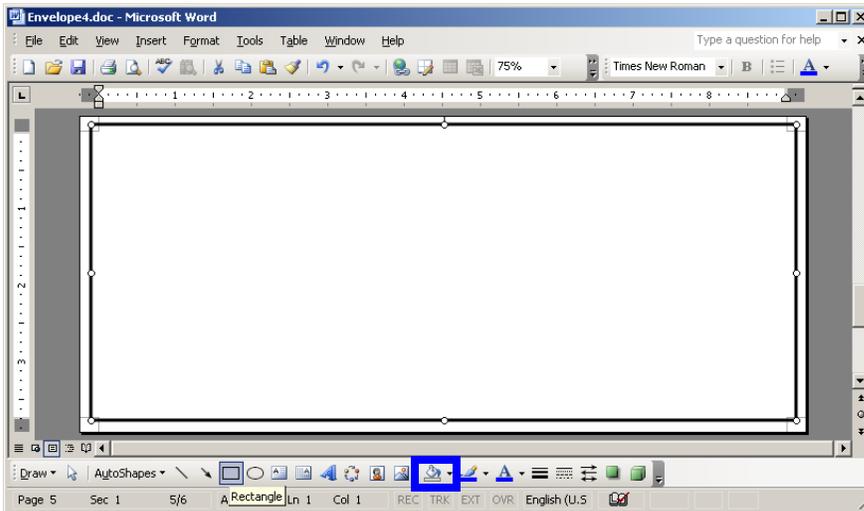
Fill the rectangle with a 75% pattern. And Select a foreground color such as red.
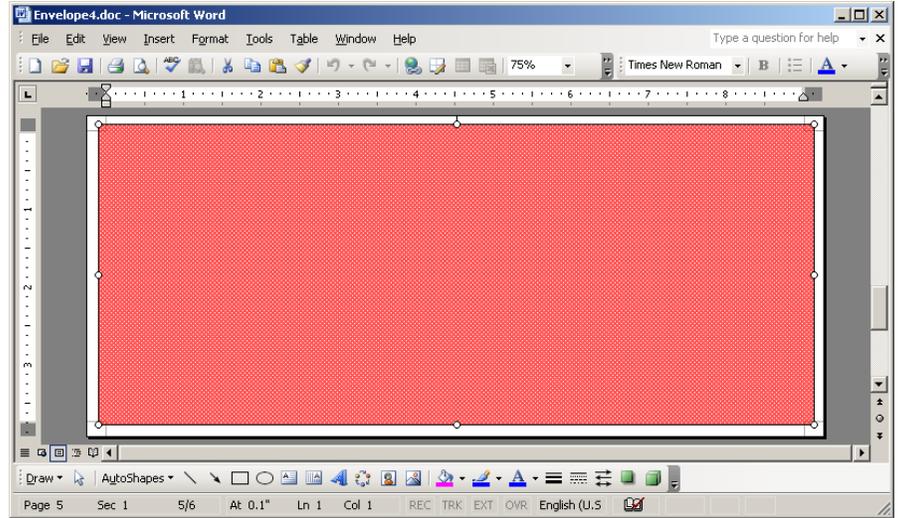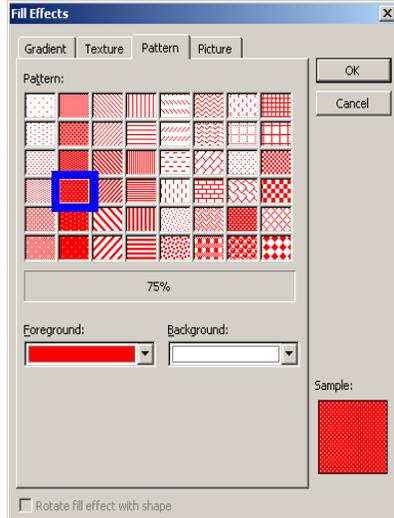
The test page created in MS Word was applied to the envelopes shown in the photos below. In the first set of photos the test pattern highlights an area on the envelope where toner did not transfer.

The second set of photos shows a differently designed diagonal-fold envelope that produces a uniform fill across the envelope.

Knowing ahead of time the strengths of each envelope can be helpful in matching a job to an envelope or knowing when to change the content and/or the layout of a print job.
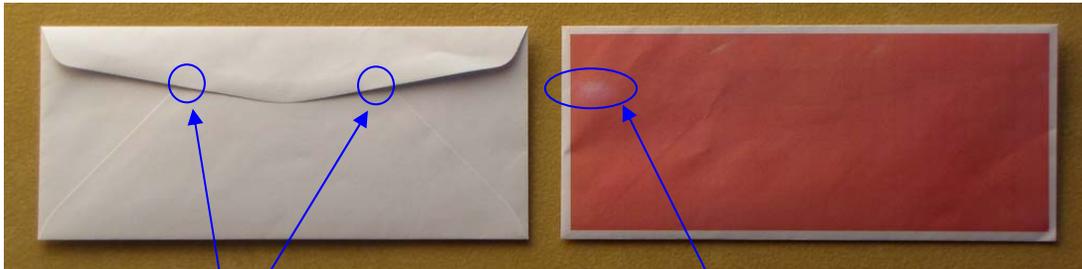
The smaller circles highlight the areas with 4-layers of paper when the flap is closed.

This envelop design has a tendency to produce a void of toner on the left side of the printed envelope. The area lacking toner is in-line with the area of the envelope where 4-layers of media overlap.
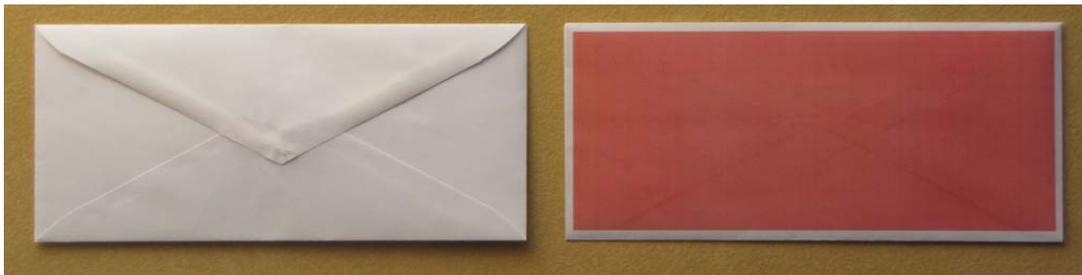
The images above illustrate that the pressure points of a particular envelope design may interfere with the printer's ability to maintain uniform contact between the printer's image drums and the surface of the envelope.

Keep in mind, that an envelope design that has a weakness in one area may be acceptable for jobs that do not use that area. Testing and experience will help to quickly identify the best envelope for a given job or layout. Some jobs may require you to use a specific envelope in order to reliably place content in specific locations or to achieve consistent quality.

General Recommendations:

- Test envelopes before purchasing large quantities.
- When possible, use envelopes designed and recommended for laser printers.
- Envelopes should be free from twist, curl or other deformations. Glue must remain intact when subjected to hot roll pressure fusing used by this type of printer.
- Windowed envelopes must be designed for higher fusing temperatures utilized by laser printers. Use of inappropriate media may damage the printer's fuser and imaging components.
- The preferred method for loading envelopes: Load envelopes face-up, with the flap down and closed, and the flap edge entering the printer first.
- The printer offers a range of media settings that influence image transfer strength, speed, and fuser temperature. In many cases, print quality can be improved by adjusting media settings. Heavier media settings may help to ensure toner is being pulled onto the envelope in critical areas, while lighter settings may help to minimize glossy hotspots.
- In some cases, the layout design or graphic artwork or may need to be adjusted to in order to deliver good results on a specific envelope. Or, some jobs will need to be paired with a specific envelope style if the client's artwork can not be adjusted.
- In some cases, the placement of the return address and/or logo may have to be adjusted to optimize image transfer along the edge of the envelope or where the envelop transitions from 2 to 3 layers of media.
- Avoid printing with the envelope flap open. Heat and humidity may result in a build-up of adhesive on printer components and contribute to frequent jams and degraded print quality.
- Watch out for envelopes with a thick layer of adhesive or an uneven build-up of glue along the edges of the flap.
- Do not use pressure seal envelopes that must be printed with the flap open and expose the printer to gummy adhesive.
- Store envelopes in a dry area. Excess moisture released while printing (fusing) will tend to seal envelopes. A controlled environment may be required if humidity levels are high.
- Small pockets of air trapped inside an envelope can also interfere with the printing process resulting in random voids. Some envelope designs are more prone to trapping air than others. Flattening envelopes prior to printing may help.
- Be sure to incorporate your client's requirements when selecting envelopes. Some customers may require an envelope that is conducive to a specific application, such as automated insertion.

## United States Postal Guidelines

Western States provides USPS requirements on their web site..
http://www.westernstatesenvelope.com/envelopes/postalInfo.htm

Envelope Recommendations:
The following envelopes have been tested on the pro900DP digital press with positive results.

- These can be added to recommended media lists, as the overall performance (feeding, print coverage, wrinkle, registration, fusing, print quality) are well balanced and will yield good results.

When printing envelopes wider than 11" long edge first (LEF) from the proColor 900dp feeder, you must remove the accordion guards on either side of the feeder paper stack guides. Doing so will allow the stack guides to be expanded to accommodate media up to 12" in width.
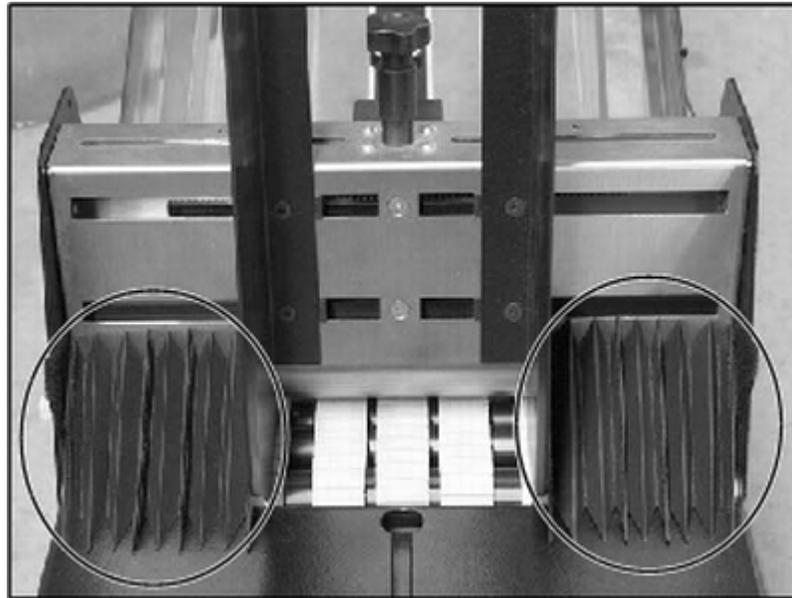

Important!
The accordion guards must be reinstalled when printing on media 11" in width or less to prevent damage to the feeder and ensure operator safety.

Western States A-7 (5.25 x 7.5 inches), 24#, Western Sulfite (Vellum Finish) Side Seam, Mechanical Insertable Announcements, Catalog No. 7057

- Envelopes feed consistently through the Oki pro900DP system.
- Care should be taken to ensure that the feeder side rails do not interfere with the alignment of the envelope at the printer registration rollers. Recommendation is to run with 1 rail installed (or no rails installed), so that printer can straighten the leading edge of the envelope without any interference from the feeder side rails.
- Good print coverage in all areas of the front side of the envelope, and all areas on the back - with exception of corners where flaps and side-seams meet.
- Excellent fusibility achieved at 'Heavy' media setting.
- Side seams minimize seam show-through from fusing.
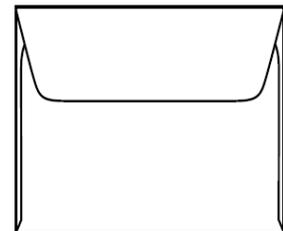
Print settings:
Custom page size 7.25x5.25, MPTray Input/ FaceUp Output, MediaCheck=Off, Media Type=Plain Paper, Media Weight=Heavy
These envelopes run at 35-40 per minute, using these settings.

Western States #10 (4.125 x 9.5 inches), 24# Ultra White Smooth Finish, Sulphite, 96% brightness, Side Seam Construction. Catalog No. 2957

- Superior feed consistency through the Oki pro900DP system.
- Good fusibility across a wide range of settings.
- Good print coverage on all areas of the front of envelope, and all areas on the back with exception of corners where flaps and side-seams meet.
- Side seams minimize seam show-through from fusing.
- Because of remoistening seal, settings above UltraHeavy3 (excess heat) may cause sealing of the flap.

Print settings:
> Custom page size 9.50x4.12, MPTray Input/ FaceUp Output, MediaCheck=Off
> Media Type=Plain Paper, Media Weight=Medium / Heavy
> These envelopes run consistently at 45-50 per minute, using these settings

Western States #10 Window Envelope, 24# Digi-Clear (Smooth Finish) Laser Compatible, Side Seam Windows. Catalog No. 3180

- Once gap setting in feeder is properly set, feeding is consistent (gap may require slight open adjustment during operation, especially if there is static buildup from the plastic windows). Loose stacking is recommended in the feed hopper.
- These window envelopes withstand wrinkling and rippling across wide range of printer heat/fusing settings.
- Good print coverage on all areas of the front of envelope, and all areas on the back with exception of corners where flaps and side-seams meet.
- Side seams minimize seam show-through from fusing.
- No damage to envelope edges near the window, once feeder is properly adjusted.
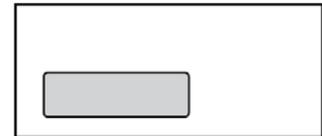
Print settings:
> Custom page size 9.50x4.12, MPTray Input/ FaceUp Output, MediaCheck=Off
> Media Type=Plain Paper, Media Weight=Heavy
> These envelopes run consistently at 35-40 per minute, using these settings