



Maximizing the Return on Investment of a Linerless Labeling Solution

The global linerless labels market is estimated to expand at a compound annual growth rate (CAGR) of 4.6% between 2017 and 2023.¹

With such steady growth projected, how can linerless labels benefit your business and what are the key considerations for implementation? This guide is intended to help you understand linerless label solutions, and navigate the associated pros and cons.

What are Linerless Labels?

Unlike standard labels, linerless labels do not have a liner with a release coating that enables the label to peel away and separate the adhesive from labels underneath it on the roll. Similar to a roll of tape, linerless labels feature a silicone release coating on the top layer of the labels and special adhesive that enables them to peel away from labels underneath.

Key Benefits of Linerless Printing

Incorporating a linerless printing solution has many advantages:

- Reduces waste to positively impact the environment
- Improves productivity as media rolls contain 50% more labels and require fewer media changes
- Supports waste-reduction efforts and compliance with government environmental directives¹
- Reduces workplace slip hazards from liner piles that collect beneath printers
- Decreases weight in mobile printers and reduces label roll shipping as linerless rolls weight up to 40% less than traditional, pressure-sensitive labels with a liner
- Enables flexibility for printing varying label lengths

Linerless labels are successfully used for a wide variety of applications in several industries ranging from food and beverage to pharmaceutical labeling to retail to parcel delivery.²

Disposing of liner material continues to be an environmental challenge. More and more countries are requiring organizations that use media with a liner to take steps to reduce waste. A recent European Union directive,¹ for example, has reclassified label liner material as “packaging waste” and has set targets for recovery and recycling. This increase in strict regulation is driving businesses to look for alternate, more environmentally friendly options such as linerless to comply and continue to meet their operational objectives.

What are the Challenges to Linerless Solutions?

With all the advantages, implementing a linerless solution can be tricky. First, you need to ensure that your printer and linerless labels are compatible with each other. One key factor is to ensure your linerless labels have been fully tested with your specific printer.

Regular thermal desktop and mobile printers cannot accommodate linerless labels. Desktop and mobile linerless printers feature a special platen roller with a non-stick surface to reduce the instances of the label adhesive sticking to the platen roller. As labels are printed, the adhesive comes into direct contact with the platen roller because there is not a liner to serve as a buffer. Also, desktop linerless printers feature a special cutter to cut the labels to size as they are produced.

Linerless materials perform much different in desktop printers than in mobile printers, and in printers from varying manufacturers. Printer brands have differences in form factor and mechanical design, requiring specific formulations in the adhesive and label coating.

Top 3 Things to Consider in a Linerless Solution:

1. Print Performance

Linerless labels typically require a higher print darkness setting than standard direct thermal labels. The heat generated by the printhead must penetrate through the release coating to activate the direct thermal chemistry to create a readable and durable image. In addition, extended print quality testing is required to ensure the release coating does not build-up on the printhead.

2. Proper Manufacturing

Linerless labels must be carefully manufactured and precisely wound on the core to ensure a proper fit in the printer. Unlike standard labels, linerless labels cannot be easily adjusted on the roll because of the absence of the liner. To prevent printer feeding issues or jamming, it is important that the label release coating has cured properly during manufacture and the adhesive chemistry is compatible with the platen roller.

If you're using a Zebra linerless printer, labels must be properly attached to the core to ensure the sensor can read and indicate when you have run out of media, and to prevent jamming.

3. Testing and Maintenance

To minimize cleaning and maintenance—along with having to replace printheads and platen rollers—linerless media needs to be rigorously tested in compatible printers to ensure minimal adhesive buildup, optimal print quality and smooth label throughput.

Parcel shippers like the United States Postal Service (USPS), are using linerless labels in greater quantities. The USPS has estimated that the move to linerless has resulted in annual cost savings of \$12 million and has yielded an additional \$6 million a year in productivity improvements.³

1. European Union Directive 94/62/EC on Packaging and Packaging Waste

2. Market Research Future : Linerless Labels Market 2019 worldwide Analysis, Global Size, Share, Demand, Regional Outlook, Development, Opportunities And Forecast To 2023

3. https://www.labelandnarrowweb.com/issues/2000-09/view_features/linerless-labels-45581/51911

Zebra's Linerless Solution

Engineering and quality testing for premium linerless printing

We design and manufacture our desktop and mobile linerless printers to deliver premium print quality and performance when paired with Zebra certified linerless supplies. Our Printer and Supplies R&D Team pre-tests Zebra's linerless materials throughout the development of our mobile and desktop linerless printers to ensure high-quality, durable print and adhesive compatibility with each printer.

Zebra's Quantitative Print Analysis (QPA) print quality testing goes beyond ANSI-grade* testing to include quantitative evaluation of text and blocks. This ensures that not only is the barcode readable, but so is everything else that is printed on the label.

After running multiple rolls of linerless media through our printers we evaluate:

- Build-up of the release coating on the printhead

Why?: Excessive printhead build-up results in poor print quality and barcode scannability, and reduces printhead life requiring more frequent printhead replacement.

- Impact of the adhesive on the specially coated platen roller

Why?: Adhesive formulations vary and some can cause excessive wear on the special coating on the platen roller. Once the coating is worn down, the adhesive transfers to the platen roller and causes label jamming.

In desktop printers, we evaluate the build-up of adhesive on the media cutter by printing a number of labels, watching for jams and cut quality and then assessing the amount of adhesive residue on the cutter.

Linerless label tension on the roll is stronger because of the adhesive and release coating. Zebra tests the linerless label tension by evaluating print quality and platen roller condition. As mobile printers have less torque than desktop printers, if the tension is too strong the printer has difficulty advancing the linerless label when printing. This results in compressed print, platen roller damage and poor print quality.

Zebra's Certified Linerless Solutions

To help you achieve your goals with linerless labeling, Zebra has certified the following linerless solutions:

8000D Linerless Desktop labels
with the ZD620 direct thermal printer:



8000D Linerless Mobile labels
with mobile printers:



Expert Support

Looking for support? Zebra offers expert assistance to ensure the components of your selected solution are properly matched. This service is offered free of charge to companies purchasing a linerless printing solution. Rely on a knowledgeable Zebra partner prior to implementing your linerless media application.

*American National Standards Institute

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