Label liners: meeting the sustainability challenge

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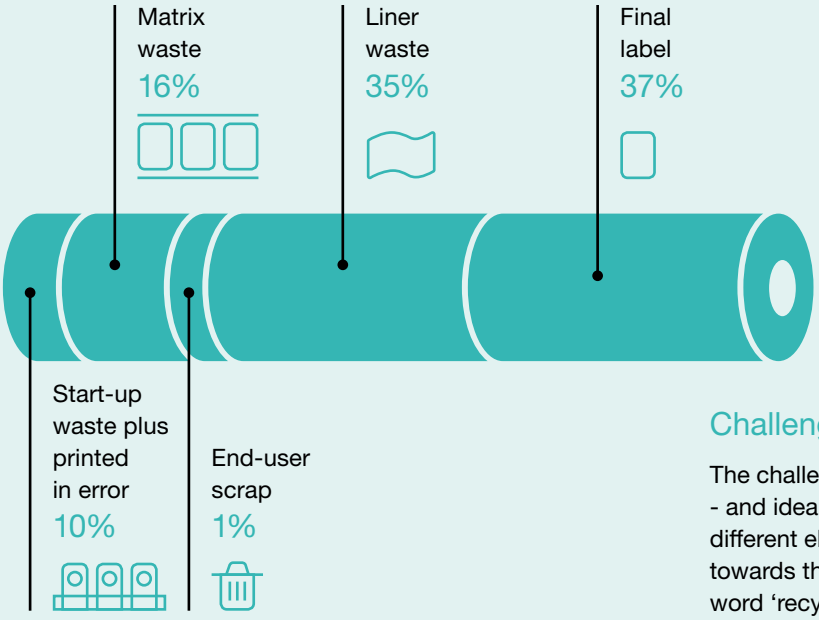
With ever-greater emphasis placed on packaging and waste reduction, brand owners are looking for solutions that secure their sustainability credentials. Consumers pay particularly close attention to packaging, where there are significant environmental gains to be made. For example, waste from labelling can create useful by-products and circular economies. Waste is not always visible on the final packaging, but its impact on brand reputation is no less real. Consumers' perceptions of a brand can be enhanced when sustainability is improved.



Challenge

The challenge of recycling waste from the labelling process - and ideally creating useful by-products - is complex. Many different elements must be addressed in order to move towards the ultimate goal of zero waste. For example, the word ‘recyclable’ can mean many things, and should not be viewed in isolation. Today there is a chance that recyclable products will still end up in landfill, so what matters is establishing genuinely viable end-to-end recycling solutions. That means considering every component within packaging, including where it comes from, how much material has been used, and what happens at every stage of the package’s journey through the value chain. This paper discusses how the sustainability of labelling laminates can be improved, with a particular focus on the label release liners that are left behind once labels have been dispensed.

Label laminate components

A standard self-adhesive labelling laminate consists of a liner, an adhesive and a facestock. All three components have an impact on sustainability.

The most visible component for consumers is the facestock, which should be made of a responsibly sourced or recycled material. Improvements here will often focus on material certification.

The adhesive is important too, both in terms of its manufacture, and in terms of its recycling performance. The final packaging combination needs to recycle well in a real-world environment. For example, both a water-based adhesive that does not involve emission of volatile components during production and an adhesive such as Avery Dennison CleanFlake™ (which enables recycling of the final package) could improve the sustainability credentials of a label material.

The least visible component for consumers, despite having a very significant impact on sustainability, is the label release liner. Release liner can constitute up to 35% of the unprinted label laminate, especially in label constructions with thin facestocks (which are growing in popularity).

Two types of liner are widely used for pressure-sensitive labels: glassine and filmic (mostly PET). The silicone-coated liner presents especially tough recycling challenges, although there have been some recent advances in dealing with the material.

Responsibly sourced, reduced materials and recycled content/processes

As with all other parts of the label construction, improving the sustainability of liners depends on three main factors: sourcing responsibly, reducing the amount of material used, and establishing recycling that performs properly under real-world circumstances - and so avoids waste going to landfill.

Sourcing responsibly

Liner materials should be derived from renewable/ properly managed plantations, with management across all supply chain stages, from raw material supply to label application. Everyone in the chain has to be certified, and many certification schemes are now available to validate responsible and renewable sourcing. For paper, this mostly involves ensuring sustainably grown resources. For films, the focus is on reducing fossil fuel usage. In both cases, closing the lifecycle loop remains a priority, which means increasing the usage of recycled materials.

Paper certification includes the well-known Forest Stewardship Council® (FSC®) and PEFC schemes. These schemes represent an essential starting point, and Avery Dennison's own 2025 Sustainability Goals include a commitment to 100% sourcing of certified paper. As an illustration of what is already possible, FSC-certification is in place for over 80% of Avery Dennison's volume of film labels on glassine liners, along with 96% of our paper facestock volume within the EU. Other options, such as label facestocks made from grape or sugar cane waste can also form part of a responsible sourcing mix.

« Sustainability Goals include a commitment to 100% sourcing of certified paper. »

Reducing material consumption

Glassine liner use can be reduced to a certain extent. First steps have been already taken such as moving from BG45 to thinner BG40 where possible. There are limitations to reducing further, however, because the liner is critical to the application and conversion process. There is a finely tuned existing market where all conversion and application machines are set to existing standards.

Another way to reduce liner material usage is to move from glassine paper to PET (and also from PET30 liner to thinner PET23). Not all machines were designed to handle filmic liners in the past, but associated productivity improvements and sustainability gains are prompting ever-greater development in the market, with a wider installed base of machines that can use thin PET liners. Due to their lower thickness and weight, PET liners enable longer label reels, with more labels on a roll. Such reels allow reduction of CO_2 emissions in transport, and enable longer converting and application runs that further reduce startup and changeover waste, both at the converter and brand owner sites.

Recycling

PET liners

Technically, there are options for recycling PET liners, but a proper collection system and silicone removal process are essential. This includes ensuring that a separation system is in place at the user's facilities - otherwise the PET liner will be contaminated by other types of plastic and other materials. Typical waste management companies will use PET for energy recovery, so care is needed to make sure that PET is re-used instead (and Avery Dennison continues to add suitable recyclers to its own recycling program).

« PET liner materials build up at brand owners and packaging providers, who need responsible waste management solutions. »

At present, PET liner recycling takes place in the context of abundant availability of more profitable PET packaging material in the form of PET bottles. The bottle recycling process has existed for years, and offers economies of scale. Global bans on waste plastic transportation, such as the new Chinese government regulations from January 2018, also mean that the amount of plastic available in Europe for recycling is enormous. PET liner materials build up at brand owners and packaging providers, who are therefore seeking responsible waste management solutions. The situation is exacerbated by the fact that liner waste has to compete with high quality food-grade waste plastic, which is preferred by recyclers because they can sell subsequently recycled materials at a high margin.

Given current conditions, downcycling is often the most commonly used option for PET liner, transforming it into thermoformable sheets used for the production of trays, fiber or strapping. Development efforts in the coming years will involve actively collaborating with different recyclers and supporting companies to make PET liner more recyclable and to introduce a truly circular economy, with the ultimate goal of recycling PET liners into new PET liners. Avery Dennison has already launched the first commercially available recycled PET label liner, made from carefully selected post-consumer waste. Careful management has resulted in a liner that offers the same stability and robustness as a virgin resin PET liner, and expansion into other product ranges is planned as availability improves.

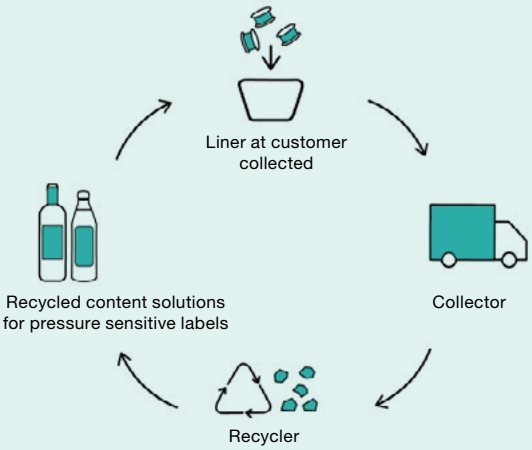
Glassine liners

With the right approach, glassine liner can also be recycled. To achieve high quality recycled paper fibers, the silicone on the liner must be “washed off” during recycling - a major technical achievement that requires special processes. Pulp can then be brought back into production.

Successful schemes are in place that recycle glassine into goods such as corrugated board for packaging or exhibition booths, which is an important improvement over going into landfill. A closed loop system is the desired solution, however, correct collection of materials is a challenge, avoiding contamination that compromises recycling. We therefore work with specialized recyclers who provide the correct training and equipment to brand owners, helping them to collect the material in the best way.

Transportation of any “waste” streams in Europe is not easy. Special documentation and transport is usually needed, creating a new challenge outside of the technical aspects of the recycling process. Fortunately, there are many experienced waste collection companies out there who can help with specific requests. It is worth remembering that the best solution is always to look for local opportunities to recycle, or to arrange collective solutions for the pick-up of specialized “by-products”, in order to reduce the trucks on the road.

« A closed loop system is ideal, and one recent example of progress towards this is Avery Dennison’s Recycled Paper portfolio. »



Conclusion

Liner waste is currently an inevitable by-product of the labelling process, but it does not have to be managed using unsustainable practices that generate large volumes of landfill, or waste that goes to incineration. The options to source and recycle responsibly do exist, and are becoming more widespread as brands seek more sustainable offerings. Constant innovation is essential - as well as collaboration between brand owners, packaging suppliers and recyclers, all working to expand sustainable options and improve the quality and availability of sustainable materials. New developments should be utilized as they emerge, and all parties along the supply chain need to be involved - to ensure that solutions and standards perform properly in each stage of the value chain. With these in place, it is possible to close the loop on liner waste.

For more information on technical performance and printing recommendations, please refer to the respective datasheets. Please note that the Avery Dennison product range and service offering can be subject to changes. For an accurate overview, please check our website **label.averydennison.eu** or contact your local Avery Dennison sales representative.

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