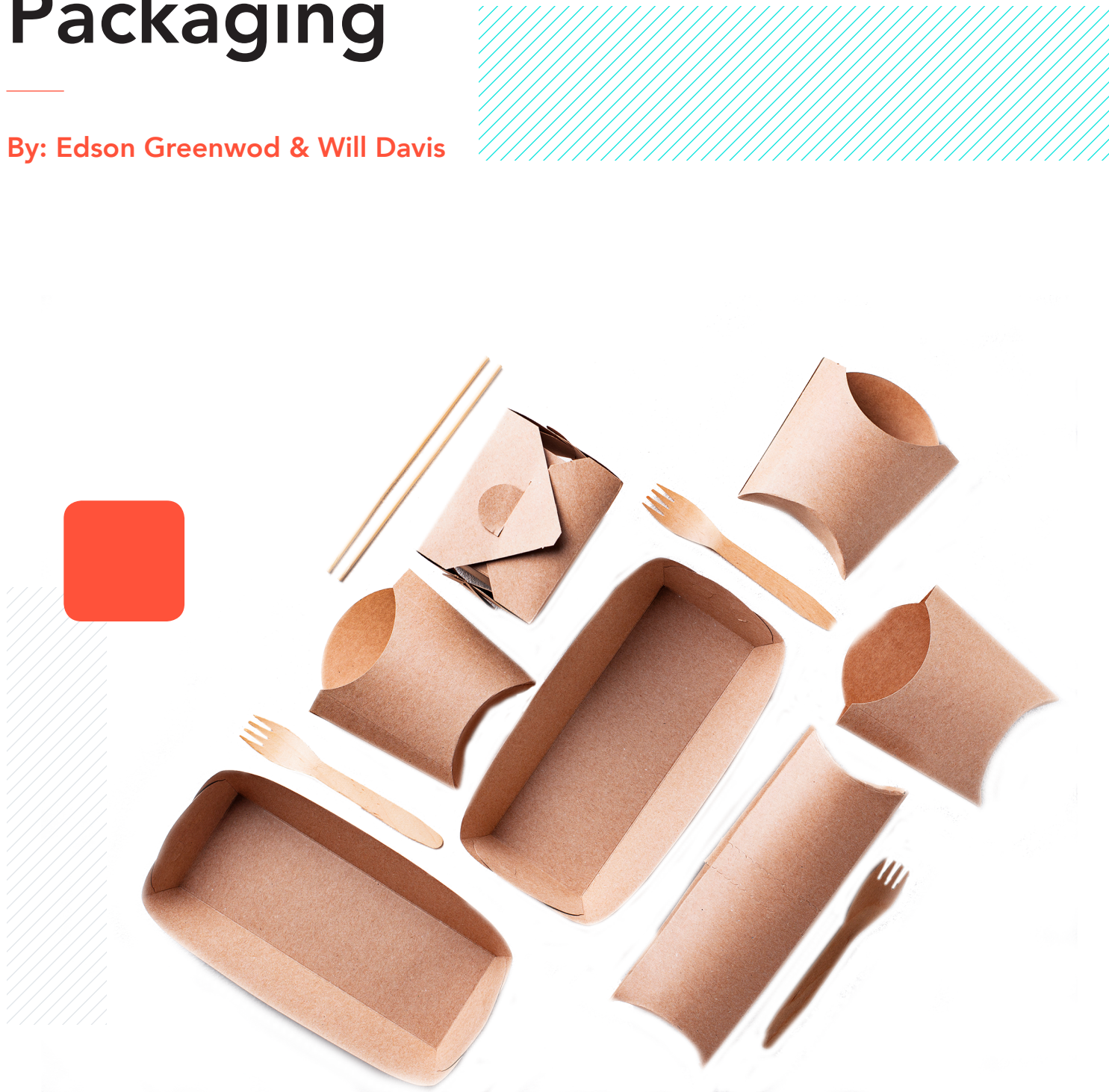


ANVYL

Guide to Eco-Friendly Packaging

By: Edson Greenwood & Will Davis



Guide to Eco-Friendly Packaging

Welcome

Over the past decade, there has been a rise in social awareness and popularity of sustainable, eco-friendly products and packaging. As a result of globalization, increased consumption, and an associated depletion of natural resources, environmental concerns are on the rise for consumers and businesses alike. As social economist Aysel Boztepe writes in his research study, "Green Marketing and Its Impact on Consumer Buying Behavior,"

"Consumers, by not remaining insensitive to environmental problems such as environment pollution and global warming, they have started to consider whether the products they purchase are environment-friendly or not apart from price and quality features of the products. With environment and environmental problems gaining importance for people, companies have started to change their production, goods or service generation, and hence marketing strategies accordingly. They have started to produce environment-friendly products and [engage consumers] with 'Green Marketing' concepts."¹

In particular, the highly valuable millennial audience is considered especially eco-sensitive. Many large brands have responded by making sustainability and recycling part of their production process, their messaging, and even their overarching values and purpose. Earlier this year, multinational CPG giant, Danone, pledged it would make all its plastic bottles from 100 percent recycled plastic by 2025 (compared to 25 percent at present), in order to tackle the issue of waste.²

HelloFresh, the meal kit provider, recently switched its package liners to ClimaCell liners, which can be disposed of in curbside recycling bins along with the corrugated boxes that contain the meal kits. The company estimates that this small change will divert 15,000 tons of packaging waste away from landfills annually.³

Businesses considering an eco-friendly strategy as they build out their supply chains and production processes need to weigh the benefits and challenges of doing so. The benefits are clear: reducing waste, fulfilling an ethical or moral imperative, engaging green consumers, and lowering costs through material reduction. Many companies have also seen a "halo effect" on their brand value among environmentally conscious consumers after putting a stake in the ground as eco-friendly.

The challenges of eco-friendly packaging are often less apparent, but include: limitations on package shapes and color, a smaller supplier base, and higher costs. Research has also demonstrated a "behavior gap" among consumers, in which the stated importance of a business being "green" isn't reflected in their actual purchasing behavior.⁴

We at Anvyl have firsthand experience in this complex decisionmaking process, as we help clients determine the best ecofriendly strategies for their business. In the pages that follow, we'll review the eco-friendly primary and secondary packaging options available on the market today (including plastic made from mushrooms!), the costs and benefits of each, and the questions each company should address before embarking on an eco-friendly packaging strategy.



REDUCE, REUSE, RECYCLE

Building physical products is challenging in its own right. Ensuring that physical products are created responsibly and eco-consciously adds another layer of complexity to the process. At its core, sustainability is about the “three Rs” we learned in grammar school: Reduce, reuse, recycle.

Sustainable packaging comes in two main types: Recyclable and recycled.

RECYCLABLE PACKAGING:

Recyclable packaging refers to primary or secondary packaging that can be disposed of in a common blue recycling bin in order to be broken down and reused or repurposed. Some recyclable packaging goes a step further and is “biodegradable,” capable of being decomposed by bacteria or other living organisms, thereby avoiding pollution.

RECYCLED PACKAGING:

Recycled content is the resulting output of the breakdown process. Businesses can reuse these broken-down materials in the creation of new products or packaging. When people say “sustainable,” they generally mean material that’s easily reused or repurposed. One important caveat: A “reusable” material doesn’t necessarily mean it’s good for the environment – plastic bags are reusable. Rather, it means that the business is not creating something wholly new in its packaging process.

PAPER AND PLASTIC

When considering primary and secondary packaging materials, businesses and suppliers are essentially discussing options for paper and plastic. Below we review the types of paper and plastic available today, along with their pros and cons.

PLASTICS








The vast majority of primary packaging is some form of plastic. As Greg Seaman writes in Plastic by the Numbers,⁵

“The well-recognized ‘chasing arrows’ symbol we see on plastic containers and products does not mean the product is recyclable. The little number inside the triangle tells the real story.”

Inside the triangle is a number, ranging from 1-7. Each number refers to a different type of plastic used in the product, and not all plastics are recyclable or even reusable. Some plastic-based products, like water bottles marked 3 or 5, cannot be broken down or recycled in the U.S.

Polyethylene Terephthalate (better known as “PET”) is denoted by the number 1. PET is one of the most common plastics for consumer products, and is found in most water bottles. It is intended for single use applications, as repeated use increases the risk of leaching and bacterial growth. Each number has its own nuances, but understanding the seven plastic codes will make it easier to choose the plastics that are right for your business.

RECYCLING DETAILS FOR PLASTIC

RECYCLING DETAILS FOR PLASTIC	ABBREV.	POLYMER NAME	USES	RECYCLING
	PETE OR PET	Polyethylene terephthalate	Polyester fibres, thermo-form sheet,	Recycled commonly through curbside programs and publicly available receptacles.
	HDPE OR PE-HD	High-density polyethylene	Bottles, grocery bags, milk jugs, recycling bins.	Recycled commonly through curbside programs and publicly available receptacles.
	PVC OR V	Polyvinyl chloride	Piping, siding, fencing, flooring, shower curtains, lawn-chairs.	Not commonly available through curbside programs and publicly available receptacles. Special pick up must be sought out.
	LDPE OR PE-LD	Low-density polyethylene	Plastic bags, can rings, various bottles.	Not commonly available through curbside programs and publicly available receptacles. Special pick up must be sought out.
	PP	Polypropylene	Auto parts industrial fibres, food containers, dishware.	Recycled commonly through curbside programs and publicly available receptacles.
	PS	Polystyrene	Cafeteria trays, plastic utensils, toys, cassettes, insulation board and other products.	Recycled through some curbside programs and most publicly available receptacles.
	OTHER OR O	Other plastics, such as acrylic, nylon, polycarbonate, and polyactic acid (a bio-plastic) and multilayer combinations of different plastics	Bottles, plastic lumber, headlight lenses, safety shields/ glasses.	Traditionally not recyclable.

Many advancements have been made in developing ecofriendly plastic solutions, both recyclable and recycled.

ECO-FRIENDLY RECYCLABLE PLASTICS

Recyclable plastic breaks down at wide range of rates, using a variety of organic and chemical processes. Within the category of recyclables, there are bioplastics, plant fiber-based plastics, and mushroom plastics.

BIOPLASTIC: A bioplastic is a) biodegradable, b) has bio-based content, or c) is both biodegradable or has bio-based content.

These plastics can also be plant-based.

- **Biodegradable plastic** is a plastic that breaks down under specified environmental conditions, resulting the action of naturally-occurring microorganisms such as bacteria, fungi, or algae, within a specified degradation time as per accepted industry standards.
- **Degradable Plastic:** Degradable plastics aren't biodegradable or compostable. Instead, they incorporate chemical additives to allow the plastic to break down more quickly than a standard plastic usually would.
- **Oxo-biodegradable plastics** are similar to biodegradable plastic, but the breakdown occurs when more oxygen is introduced.

PLANT FIBER MATERIAL: The second major type of recyclable plastic, Plant Fiber material is mold packaging material generally created by pulverizing crop straw and adding natural adhesives. The raw plant fiber-based materials may vary, but the result is a material that is 100% biodegradable. Many businesses use this type of material as a Styrofoam replacement, since it has high-buffer ability.

MUSHROOM PLASTIC: The third, and newest, form of recyclable plastic is mushroom plastic, which uses Mycelium (mushroom bottoms) and plant waste material to create a durable form of packing. Mushroom plastic can replace Styrofoam and polystyrene products, and is commonly used as thermal insulation material.

ECO-FRIENDLY RECYCLED PLASTICS

Recycled plastics are reclaimed from a wide variety of sources and are repurposed as product packaging. The two main types of reclaimed plastics are "beach and ocean plastics" and "postconsumer recycled content (PCR)":

BEACH AND OCEAN PLASTICS: These materials are reclaimed at the shore or from the ocean and are recycled into new materials.

POST-CONSUMER RECYCLED CONTENT (PCR): PCR is typically reclaimed from a landfill and ground up to be transformed and used again as packaging.

Using recycled plastics reduces the amount of new material a business creates, reducing its ecological footprint. But using these materials also brings its own challenges. Certain product categories, including those requiring FDA approval like cosmetics or food products, should not use recycled plastics, because it is impossible to provide a history of where the plastic has been (an FDA requirement to ensure the plastic is safe to touch your product.) At a more fundamental level, fewer suppliers source and work with recycled plastics, limiting both a business's supplier pool and its ability to negotiate timelines and pricing.



PAPER

Most secondary packaging is some form of paper. For businesses who seek an eco-friendly alternative to using pure paper from live trees, there are a number of attractive options including:

RECYCLED PAPER

Recycled paper comes in various ratios of recycled to new paper, and this ratio is typically referenced in the product's name (e.g., 20%, 80% recycled paper).

FOREST STEWARDSHIP COUNCIL (FSC) CERTIFIED PAPER

More commonly referred to as simply 'FSC Certified,' this type of paper has received a stamp of approval from the Forest Stewardship Council, an organization founded in 1993 amid growing deforestation concerns to promote sustainable forestry practices worldwide. FSC Certified paper comes from sustainable forests, and cannot be illegally harvested, harvested in violation of civil rights, or from genetically-modified forests.⁶

BIODEGRADABLE PEANUTS

Many businesses are ditching foam packing peanuts in favor of more eco-friendly packing paper and peanuts. These biodegradable, non-toxic peanuts are typically wheat or corn starch-based. They dissolve in water and can be put into compost piles after a single use. In addition, they don't carry an electrostatic charge, so they don't stick to clothing. Sometimes called "edible peanuts," are also safe if a human or pet ingests them accidentally, though they are not generally not produced

in food-safe conditions, and their processing removes any nutritional value, so eating them is not recommended. On the negative side, they are heavier than traditional packing peanuts, and so can result in higher shipping costs.⁷

DEVELOPING YOUR ECO-FRIENDLY STRATEGY

Eco-friendly materials can minimize waste, reduce a business's footprint and overall costs, as well as deepen relationships with eco-conscious consumers. As you develop your eco-friendly packaging strategy, however, it is important to be aware of and address some of the key issues and limitations of these materials:

COST

While eco-friendly packaging can bring costs down by using less material overall, for many brands, the reality is that recycled or recyclable materials cost more per unit, offsetting potential gains. This is because recycled and recyclable materials may be harder to source or must undergo more steps (e.g., claim, sort

repurpose) than virgin materials to be ready for use.

SUPPLIER BASE

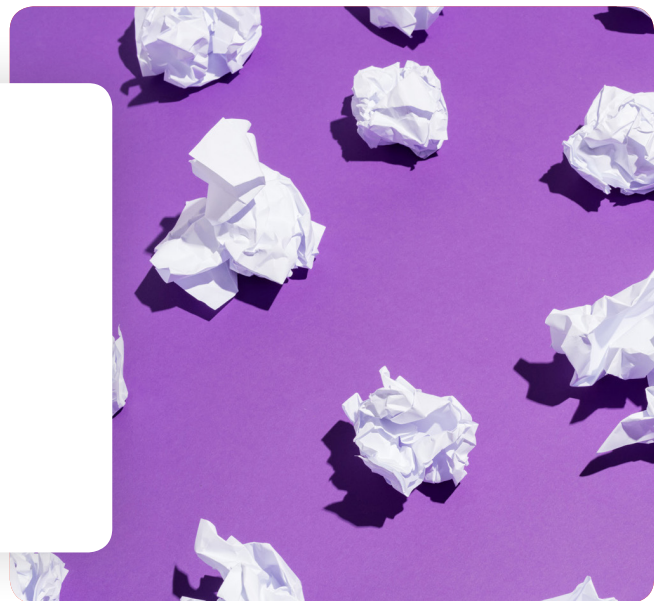
The more niche the material a business seeks to use, the fewer suppliers typically work with it. The law of supply and demand means that in addition to paying higher prices for higher-cost materials, you may have less room to negotiate pricing overall.

AUDIENCE

Businesses must ask how deeply their target customer identifies with being green and sustainable. Is having a green strategy a prerequisite for customer acquisition or a "nice to have"? Will being eco-friendly build brand loyalty?

The harsh reality is that, overall, the majority of 53 social science studies found a gap between how much people say they care about a business's sustainability and their actual purchasing behavior.⁸

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That said, overall interest in purchasing eco-friendly products is on the rise, and there is evidence that a perceived higher cost of eco-friendly goods, once a barrier to purchase, is decidedly less so today, especially among women and younger consumers. Generally, married people, women, and millennials are more driven by eco-friendly messaging and brand values.⁹

BRAND CONSISTENCY

Is your product environmentally minded? Does your brand have a sustainability mission? Research shows consumers tend to think of all packaging as a whole, perceiving it as either eco-friendly or not. Having “eco consistency” across your product and packaging is critical to maintaining overall brand consistency.¹⁰

COSMETIC AESTHETICS / APPEARANCE

Colors and shapes are limited when working with eco-friendly materials. For example, pure white is not achievable with most recycled paper products or bioplastics. Businesses must ask themselves, how important is color to their packaging? Similarly, mushroom plastics cannot hold certain shapes. Does the product require a complex shaped packaging? Does it require heavier resistance and protection than plant-based materials can provide?

REGULATIONS

As mentioned above, products requiring government oversight like FDA approval cannot use recycled plastics, because they must be able to demonstrate the provenance of the material from creation through usage, typically an impossible task when dealing with reclaimed materials. Regulated products may also have functional limitations that make eco-friendly packaging challenging to execute. For example, the FDA requires vitamins be oxygen- and moisture-resistant, as well as vacuumsealed - characteristics that simply aren't possible with porous bioplastics.

CONCLUSION

In order to develop the right eco-friendly strategy for your business, it's important to understand all of the plastic and paper alternatives available, and weigh their benefits and costs.

We hope this report helps empower you to have meaningful conversations with your suppliers and within your own business units about your sustainability goals, including:

- The difference between compostable, recycled and recyclable materials
- Options for eco-friendly plastics and papers, along with their advantages and limitations
- Key parameters to consider when developing your sustainability packaging strategy

READY TO EXPLORE AN ECO-FRIENDLY STRATEGY FOR YOUR PACKAGING?

Please get in touch at hello@anvyl.com

SOURCES:

- 1 Boztepe, “Green Marketing and Its Impact on Consumer Buying Behavior,” 2012.
- 2 Reuters, 2018.
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- 10 Salazar Packaging, “What Is Eco-Consistency?,” 2008.

ABOUT ANVYL

Anvyl's Intelligent Supply Chain Platform streamlines supply chain communication, automates workflows, and delivers real-time production analytics from order to delivery. Companies across the globe use Anvyl to mitigate risk across their supply chains and save millions of dollars in operational costs. Anvyl's digital platform delivers transparency across the supply chain, surfaces key production insights for users, and provides predictive analytics to improve operational efficiency. A variety of customers across manufacturing and distribution rely on Anvyl for their operational success from COOs, global supply chain managers, and procurement leaders.

Visit www.anvyl.com or email sales@anvyl.com to start developing an eco-friendly packaging strategy that meets your business needs today.

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Anvyl Edson works to ensure Anvyl's customers accomplish all their supply chain objectives and partner with world class suppliers as they bring their products to market. Prior to Anvyl, Edson was at Palantir Technologies, The Blackstone Group and served in the U.S. Marine Corps.

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