FREQUENTLY ASKED QUESTIONS:

Alternative Fibre Packaging and Food Contact Safety

2025

canopy

INTRODUCTION

Ensuring that food packaging is safe for human health is essential for brand owners. As brands consider or investigate innovative new materials, ensuring that products will meet established standards around food contact packaging is a top priority. In this fact sheet, we answer some of the common questions brands have about using alternative fibres for food, beverage, or beauty-based packaging, provide examples of Next Generation alternative fibre products that are safe for food contact, and outline key considerations for brands that are researching and trialing these low-carbon alternatives.

THE BOTTOM LINE: Data shows that both recycled and Next Gen fibre-based packaging can be designed to meet the same food safety compliance standards as conventional wood-based packaging.

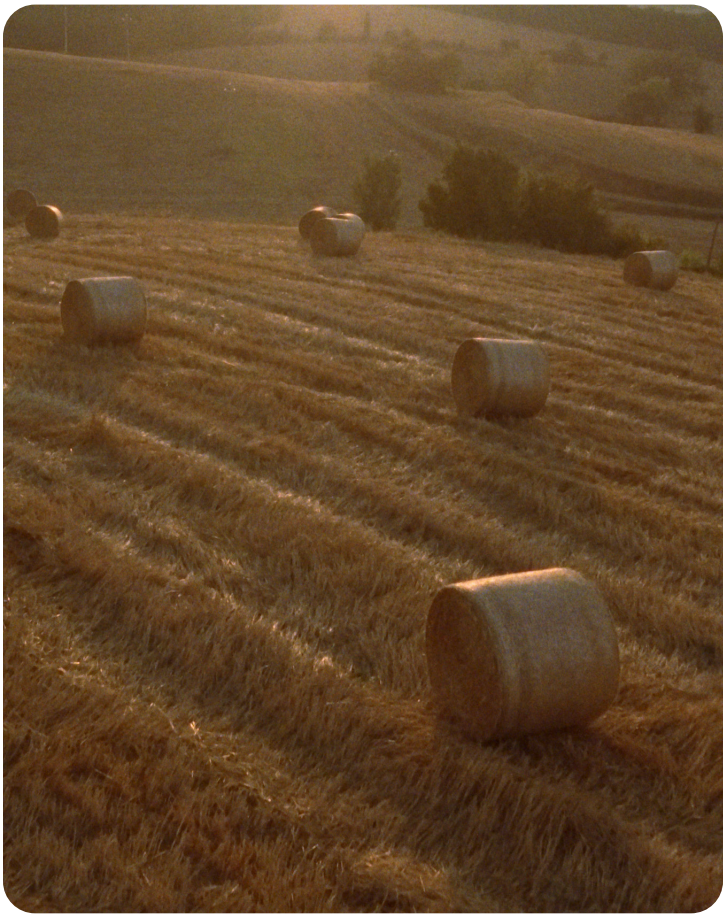
CONTEXT: NEXT GENERATION ALTERNATIVE FIBRES

Pulp for paper packaging is, with demand driving about a tenth of total logging pressure on the world's forests,[1] amounting to an estimated 3.1 billion trees cut down annually.[2]

This scale of industrial logging is fundamentally incompatible with urgent global targets to protect nature and ensure a climate safe future. Current industry practices are inadequate to ensure that Ancient and Endangered Forests are not lost or degraded for paper packaging.

Today, of all the pulp available annually, about 43% is made from virgin forest fibre, 54% is made from recycled paper, and the remaining 3% is made from other forest-free fibres like wheat straw or sugarcane bagasse,[3] what Canopy refers to certain agricultural fibres as 'Next Generation Solutions.' Consumer goods companies can reduce supply chain emissions and biodiversity impacts and mitigate risk by curbing the use for virgin forest fibre-based paper packaging and increasing the use of recycled or Next Gen fibre.

Canopy has an audacious goal to eliminate the use of ecologically critical forests in the paper, packaging, and textile sectors by scaling an additional 60 million tonnes of low-carbon Next Generation fibre production by 2033.[4]



Context: Food Contact Safety

For all paper packaging, regardless of the feedstock (wood, recycled, or Next Generation alternative fibre), various chemicals like printing inks, phthalates, surfactants, or bleaching agents can be introduced during the manufacturing or recycling of packaging, and these can potentially pose health risks if the substances migrate from the packaging into the food at unsafe levels. Some of these substances are added intentionally; these include bisphenols (commonly added to plastic lining on certain beverage bottles or metal cans), phthalates (plasticizers), and per- and polyfluoroalkyl substances (PFAS), which have historically been added to food packaging to make it greaseproof. Some substances are not intentionally added as part of the manufacture of packaging, but are in some ways present; for example, chemical by-products as a part of the recycling process, or trace elements from manufacturing equipment.

Several studies from recent years have confirmed the presence of chemicals of concern, including some pesticide residues, in both wood-fibre and non-wood fibre packaging paper.[5] To date, no study has identified alternative fibre as a unique or elevated threat compared to conventional fibres. For example, a 2021 study in the EU found that while chemicals of concern were identified in a sample of various single-use food ware materials made of various plant fibres — including bagasse, wheat straw, and palm leaf — and paper straws made with unspecified fibre, nearly a majority of the sampled alternative products were pesticide-free.[6]

When making packaging for food and beverage, packaging producers need to ensure safe levels of both intentionally and non-intentionally added chemicals. Many countries, including key markets such as the United States, the European Union, India, and China have regulations to ensure that any new packaging formats that enter the market are safe for human health. These regulations can vary by jurisdiction in scope as well as enforcement, but generally, demonstrating compliance with these laws includes various testing protocols to prove that migration into food does not occur. Generally, producers follow testing protocols in specialist labs, and products that pass can carry a certificate showing that the packaging met that standard (in other words, that it is certified food-safe). Brands that purchase this packaging can check compliance, although the burden is typically on the producer placing the product on the market.

In addition, brands may have policies, limitations, or guidance around food contact materials that they can apply either where regulations do not exist, or in an effort to be more stringent and precautionary than an existing regulation.

Frequently Asked Questions About Food Contact Safety and Alternative Fibre

1. Are there currently Next Generation alternative fibre-based packaging options that comply with food-contact regulations available on the market?

Yes!

In the latest 2025 update to Canopy's EcoPaper Database (EPD),[7] there are 53 alternative fibre-based paper or paper packaging products from that are either certified to be safe for food contact or claim compliance with at least one food contact safety regulation. These products are made from a range of feedstocks including sugarcane bagasse, sugar beet residue, cereal straws (wheat straw, rice straw, barley straw), wheat bran, wild grass, hemp, miscanthus, silphie, and bamboo.

For example, packaging producer PaperWise offers several types of paper and packaging made from a blend of agricultural waste, including machine-glazed paper suitable for bakery, sandwich, or vegetable bags,[8] and micro-flute.[9] Some of these products, available in Europe, are certified compliant to the European Regulation (EC 1935/2004).[10] Carvajal offers folding packaging made of 100% sugarcane bagasse, which has been certified as safe for food by testing and certification institute ISEGA, according to both the regulation in the EU for food contact materials as well as the US Food and Drug Administration (FDA).[11] UltraGreen Sustainable Packaging has a range of FDA-approved products for food applications — including takeout containers and pizza boxes, made of agricultural blends of wheat straw, bagasse, and other fibres.[12] Many of these food-safe options are available globally or in many regions. PaperWise notes that its customers in the food and beverage industry include Heineken, Lufthansa, Pukka, and Tony's Chocolonely.[13]

While the EcoPaper Database is product-specific, the available products indicate at least 25 packaging producer companies that have the capability to produce food-safe packaging; these producers could potentially design and manufacture bespoke packaging solutions for food and beverage companies, and many have global manufacturing presence.

2. Can 100% recycled fibre be used for food-contact packaging?

Yes!

In the latest EcoPaper Database update, there are 67 products marketed as food-safe verified that have at least some recycled content; 57 of those are 100% recycled content. These represents 29 producer companies, the majority of which have global manufacturing presence and availability.

The Recycled Paperboard Association developed a program and protocol to help producers comply with FDA regulations, which explicitly allows recycled fibre as long as specified substances are not present above allowed concentrations. The Recycled Paperboard Technical Association lists member mills in North America that have been audited to this protocol.[14]

Frequently Asked Questions About Food Contact Safety and Alternative Fibre (Cont.)

3. In some regions, agriculture crops are routinely subject to herbicides and pesticides and the same crops are feedstock for Next Generation packaging. Does this mean that Next Gen fibres are of elevated concern?

While pesticide regimes can indeed vary by country, and some may have weaker regulations on the type or amount of pesticides that can be applied to agricultural crops, brands should be assured that alternative fibre packaging marketed as food safe is subject to the same safety regulations as any other packaging material.

Regardless of regulatory compliance, some producers of alternative fibre packaging materials take independent steps to ensure that the feedstock itself is tested for pesticides, or seek confirmation from the pulp mill.[15] Several of the producers with packaging formats in the EcoPaper Database have done this testing and verification,and can provide this data to customers upon request.

Fibre from organic crops or crops, or packaging certified to the Roundtable on Sustainable Biomaterials standard (RSB) — Canopy's recommended certification body for agricultural material [16] — system is in place, and precautionary measures with regard to product labelling.[17] While certified organic packaging or alternative fibre packaging certified by the RSB limited in terms of volumes, increased market demand from brands for this fibre could increase its availability.

4. Is PFAS an issue with alternative Next Gen fibres?

PFAS (Per- and Polyfluoroalkyl Substances) are a class of chemicals that resist oil, grease, and heat; they are typically applied as part of coatings to cellulose-based packaging of all types, not just alternative fibres, to make the packaging greaseproof.[18] Current scientific research indicates that exposure to PFAS, also known as 'forever chemicals,' may lead to adverse health outcomes.[19] Some regulatory bodies in different states and countries have or are beginning to ban the use of PFAS in food packaging, including the FDA[20] and the Biodegradable Products Institute (BPI) certification body for compostable products currently will not certify products that contain PFAS.[21] **Canopy does not support the use of PFAS in any food contact packaging.**

Brands may be familiar with molded fibre as compostable takeaway packaging and be aware of recent studies in which some compostable takeaway packaging tested positive for presence of PFAS. While each study is different, it is important to note that the presence of PFAS was not directly related to the feedstock itself but the added barrier. Due to the prevalence of PFAS in molded fibre foodware, Canopy has attempted to verify that any foodware included in the EcoPaper Database is PFAS-free, either via certification or other methods.

5. Is paper packaging that is certified for food-contact able to be recycled, or do the coatings prevent it from being recycled at scale?

Factors that impede recyclability are typically related to design, and more complex multi-layer material packaging applications such as plastic or aluminum coatings or barrier layers, may pose challenges for sorting and thus impact recyclability.[22]

In October 2024, Canopy published an analysis of the potential recyclability of Next Gen packaging. This analysis found that many alternative fibre packaging formats are routinely tested to be technically recyclable in the conventional paper recycling processes. Testing to recyclability protocols is advised by several industry-led design guidelines and is accepted as a proof point for some 'truth in labelling' laws in the United States and Canada. Brands needing reassurance that alternative fibre is recyclable should be encouraged to test specific packaging as they would any other novel packaging formats. In light of evidence that alternative fibre-based paper packaging routinely passes credible recyclability testing protocols, Canopy strongly recommends brands not let design guidelines indicating non-recyclability deter them from researching and trialling alternative fibre-based packaging.

CONCLUSION

As regulations tighten and consumers demand increased responsibility for packaging, it is imperative that brands reduce pressure on the world's forests through responsible packaging choices, from maximizing recycled content to researching, trialing, and maximizing the use of alternative non-wood fibres. Brands are right to be cautious about novel packaging formats and should continue to ensure their customers' health and safety. Canopy's analysis confirms that both recycled and Next Gen fibre-based packaging can be designed to meet food contact safety standards, offering a viable, low-carbon alternative to conventional materials.

BRANDS SHOULD:

1. Use the EcoPaper Database to find products and producers of food-safe paper packaging that is of highest environmental quality.

2. Be encouraged to explore and trial Next Gen alternative fibres to support market development, including for non-food packaging applications.

3. Engage suppliers of paper packaging to understand how their supply chain partners ensure that products are safe for food contact.

FOOTNOTES

1. Canopy analysis based on FAO, FAOSTAT statistical database: Forestry Production and Trade, https://www.fao.org/faostat/en/#data/FO (derived from 2023 data; accessed Dec 2024)
2. Estimate derived from global wood pulp production volumes reported in the FAOSTAT statistical database based on 2023 data (accessed Dec 2024), along with environmental impact conversion ratios following the methodology used by the EPN Environmental Paper Calculator, Version 4.0.
3. FAO, FAOSTAT statistical database: Forestry Production and Trade, https://www.fao.org/faostat/en/#data/FO (derived from 2023 data; accessed Dec 2024).
4. Baseline 2023 data is extrapolated from production values of non-wood fibres provided in the FAOSTAT statistical database (2021 global production data; accessed Apr 2023).
5. See, for example, BEUC, Towards Safe and Sustainable Food Packaging. 2021. https://www.beuc.eu/sites/default/files/publications/beuc-x-2021-050_towards_safe_and_sustainable_fcm._report.pdf, pp 1-2, 4.
6. BEUC, Towards Safe and Sustainable Food Packaging. 2021. https://www.beuc.eu/sites/default/files/publications/beuc-x-2021-050_towards_safe_and_sustainable_fcm._report.pdf, p 6.
7. Canopy, EcoPaper Database. Last updated March 2025. https://canopyplanet.org/tools-and-resources/eco-paper-database. Criteria for inclusion in the EcoPaper Database is based on the Paper Steps, developed with and endorsed by the Environmental Paper Network. Paper Steps rankings are based on broad summaries from leading robust and transparent life cycle analyses. The impact of specific papers may vary based on variations in fibre sourcing, manufacturing and production practices. The EcoPaper database does not represent all available alternative fibre on the market, and products that are known to contain PFAS are not included.
8. PaperWise. https://paperwise.eu/en/shop/vellen-rollen-en/paperwise-natural-machine-glazed-reel-310mm-wide-45-g-m%c2%b2-1-reel/ (accessed March 2025)
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11. ISEGA. " Certificate of Compliance," for Carvajal. Accessed March 2025. https://www.isega.de/dokumente/59450e.pdf
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13. https://paperwise.eu/en/tipa-and-paperwise/
14. Recycled Paperboard Technical Association. "Certified Member Mills for Food-Contact Materials". https://www.rpta.org/certification/certified_mills.cfm (accessed March 2025)
15. Correspondence between Canopy and several producers of alternative fibre packaging, July-August 2024.
16. Personal correspondence between Canopy and Roundtable on Sustainable Biomaterials staff. See https://www.fao.org/pesticide-registration-toolkit/special-topics/highly-hazardous-pesticides-hhp/identification-of-hhps/hhp-criteria-1/en/ for more on WHO's pesticide classification.
17. Personal correspondence between Canopy and Roundtable on Sustainable Biomaterials staff.
18. United States Food and Drug Administration (FDA), "Per- and Polyfluoroalkyl Substances". https://www.fda.gov/food/environmental-contaminants-food/and-polyfluoroalkyl-substances-pfas (accessed March 2025)
19. United States Environmental Protection Agency. "Our Current Understanding of the Human Health and Environmental Risks of PFAS". https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas (accessed March 2025)
20. US Food and Drug Administration. "FDA, Industry Actions End Sales of PFAS Used in US Food Packaging" (press release). February 2024. https://www.fda.gov/news-events/press-announcements/fda-industry-actions-end-sales-pfas-used-us-food-packaging
21. Biodegradable Products Institute. "Fluorinated Chemicals". https://bpiworld.org/fluorinated-chemicals (accessed March 2025)
22. Canopy. Recyclability of Next Gen: Can Paper Packaging Made from Alternative Non-Wood Fibre Be Considered Recyclable? October 2024. https://www.datocms-assets.com/132613/1729000577-p4g_recyclability_brief_3.pdf