

# Aseptic packaging and technology: Making perishable foods safe and available

We rely on everyday food items for our daily nutrition. However, many of these food and beverages such as milk, juices and plant-based alternatives are highly perishable with short shelf lives, thereby presenting **many sustainability challenges across the value chain.**

The EU produces

**250**  
MILLION TONNES  
of perishable foods  
per year.<sup>1</sup>



If not aseptically processed and packed, perishables must be kept in the cold chain, with a shorter shelf life.



Otherwise, the food will **decay and spoil** within days.



Failure to follow precautions may pose **risks to human health.**

European policymakers now face the challenge of regulating packaging for this type of food **in line with the EU Green Deal ambitions,**<sup>2</sup> aiming to make food systems sustainable and resilient, while supporting reduction in food loss, food waste and carbon footprint.

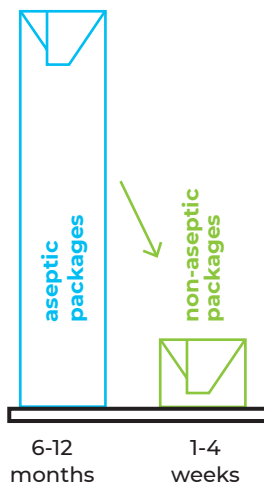


The aseptic process of heat treatment, filling and packaging at the food producer enables the absence of harmful microorganisms across the entire distribution chain until consumption.

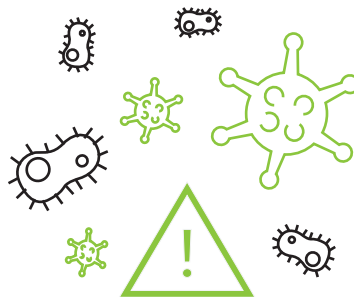
Everything in the production chain must be commercially sterile. That includes food and packaging materials, all machinery and the environment in which the food is packaged.

## Without aseptic packages:

**1** Shorter shelf life of perishable foods<sup>3</sup>

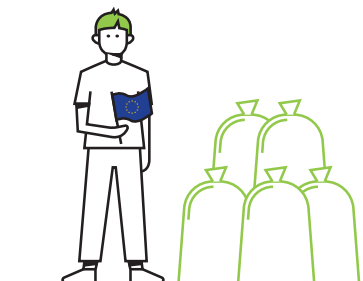


**2** Increased growth of pathogens posing a health risk<sup>4</sup>



Food and beverages need to be at **pH <3.7 and kept at <4°C** along the whole value chain to exclude at least bacterial foodborne pathogens. This would require a redesign of the entire distribution chain.

**3** Increased risk of additional food waste



**127kg**  
food waste  
per EU citizen  
per year<sup>5</sup>

<sup>1</sup>Key figures on the European food chain, Eurostat, 2021 / <sup>2</sup>A European Green Deal, European Commission, 2019 / <sup>3</sup>Extended shelf life milk-advances in technology, Rysstad and Kolstad, 2006 / <sup>4</sup>Growth of food-borne pathogens Listeria and Salmonella and spore-forming Paenibacillus and Bacillus in commercial plant-based milk alternatives, Klaudia Bartula, Máire Begley, Noémie Latour, Michael Callanan, FOOD MICROBIOLOGY, 2023. / <sup>5</sup>Avoiding food becoming waste in households - the role of packaging in consumers' practices across different food categories, Williams, Lindström, Trischler, Wikström and Rowe, Journal of Cleaner Production, 2020.

By using aseptic packaging and technology, perishable foods:

can be stored at ambient temperatures

for 6-12 months

without the need for cold chain distribution

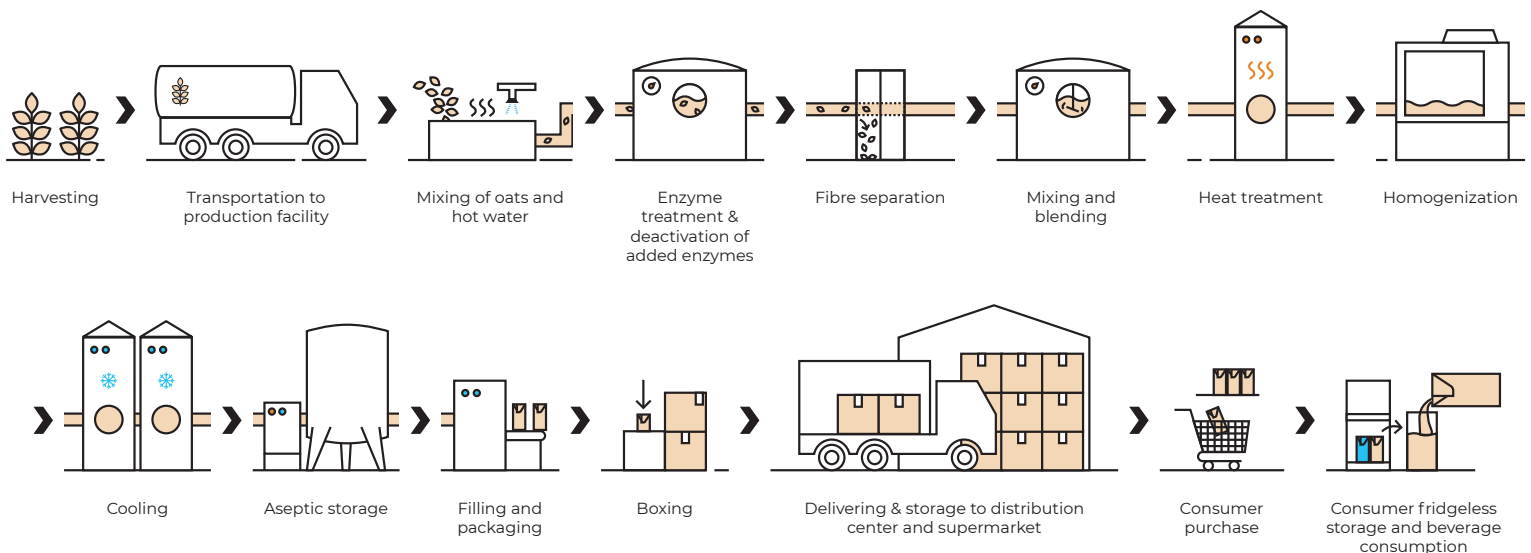
## Plant-based beverages require specialised processing and packaging solutions.

Consumption of oat-based beverages in Europe increased by 50.8% between 2020 and 2022 – as consumers seek out health benefits as well as low environmental impact<sup>1,2</sup>.

This is good news for people and the planet, but there are **key food safety and availability considerations to address**, both for the raw

ingredients of plant-based beverages as well as for the beverages themselves, which are not naturally stable.

This diagram of the oat-based beverage production chain illustrates **how the manufacturing of plant-based beverages works**.<sup>3</sup>



The high share of renewable materials help beverage cartons feature a lower carbon footprint than many alternatives.<sup>4</sup>

### Did you know ...



The process of creating a beverage from milled oats was developed in the mid-1990s at Lund University in Sweden, as the result of a study on lactose intolerance.



47% Oats  
24% Soy

Oat beverages surged past soy in 2022 to become the most popular plant-based beverage in Europe, accounting for 47% of sales, against soy's share of 24%.<sup>5</sup>



€ 1.96 billion by 2026

The European market for oat-based beverages is projected to reach €1.96 billion by 2026.<sup>5</sup>

Aseptic filling technology combined with innovative packaging, including aseptic beverage cartons, keeps food and beverages safe and flavourful for 6-12 months, without the need of refrigeration or preservatives.

**Tetra Pak**<sup>®</sup>  
PROTECTS WHAT'S GOOD

<sup>1</sup>Nielsen, IRI, Kantar Q4 2022 – consolidated figures from: BE, IT, FR, ES, UK, DE, AT, CH, PO, PT, SE, NL, NO, DK / <sup>2</sup>'How Oat Milk Can Help Save the Environment' Columbia University, 2021 / <sup>3</sup>'White paper: Oat-based beverages – processing challenges & techniques' Tetra Pak, February 2020 / <sup>4</sup> Supporting Evidence - Environmental performance of beverage cartons, Circular Analytics, 2020 - Source study only covered packaging for milk and juices / <sup>5</sup>Global Market Data: Segment Insights, Tetra Pak, 2022

Learn more about packaging perishable liquid foods

