



Ellen MacArthur Foundation Report Lists Spatial Atomic Layer Deposition (SALD) as a Key Enabler of Responsible Paper-Based Flexible Packaging

The Foundation highlights advanced barrier technologies required to replace single-use plastic in flexible formats

WATERLOO, Ontario – March 10, 2026 — Nfinite, the advanced manufacturing company commercializing high-barrier paper technology to replace plastic packaging using its atmospheric pressure Spatial Atomic Layer Deposition (AP-SALD) platform, today welcomed the release of the Ellen MacArthur Foundation’s new report, *“Paper-Based Flexible Packaging – The role it could play in tackling small-format flexible plastic pollution in markets with high leakage rates.”*

The report brings together insights from more than 60 NGOs, experts, brands, packaging manufacturers, and academics, and sets out six critical conditions under which paper-based flexible packaging can help reduce persistent plastic pollution in regions without robust recycling and collection infrastructure. Notably, the Foundation identifies emerging barrier technologies such as Spatial Atomic Layer Deposition (SALD) as emerging innovations capable of delivering the high-performance coatings required for paper to compete with plastic in demanding flexible packaging applications.

“We are greatly encouraged that the Foundation highlights the critical role played by advanced barrier technologies such as SALD in addressing the problem of plastic pollution,” said Miguel Galvez, CEO of Nfinite. “The report makes clear that responsibly designed paper-based flexible packaging will require significant innovation and investment. High-performance, ultra-thin coatings are essential to achieving the moisture and oxygen barrier needed for the real-world shelf life needed to replace thick plastic laminates.”

Flexible packaging represents a \$270 billion global market and remains overwhelmingly dominated by plastic due to its low cost and strong barrier performance. Small-format flexibles such as wrappers, sachets, and pouches, however, are among the most difficult packaging formats to collect and recycle. As a result, this type of plastic is a major contributor to environmental leakage in many regions of the world.

The Foundation’s report emphasizes the promise of paper-based alternatives if they can meet critical criteria to avoid unintended environmental consequences. These include: ensuring compatibility with local recycling systems, minimizing overall environmental impacts during production, and ensuring responsible fiber sourcing.

“Flexible plastic packaging pollution is a systemic challenge – with an estimated 20 trillion items expected to enter our oceans over the next 15 years. There’s no silver bullet, therefore adding

paper-based alternatives to the mix helpfully expands the toolbox, complementing other priority solutions such as reusable packaging,” said Sander Defruyt, Plastics Strategy Lead at the Ellen MacArthur Foundation. “This will require major innovation and action from industry and policymakers to speed up development and scaling, guided by the six critical criteria in this report to ensure we don’t replace one problem with another.”

Nfinite’s AP-SALD platform enables the deposition of ultra-thin, highly conformal inorganic barrier layers onto paper in an open-air, roll-to-roll process. By applying coatings at nanometer scale thicknesses—far thinner than conventional laminated or extruded polymer films—the technology allows paper to reach performance levels historically achievable only with metallized multi-layer plastic structures.

“Our approach focuses on maximizing fiber content while minimizing added material,” Galvez added. “Ultra-thin coatings allow us to preserve paper’s recyclability profile and reduce persistent plastic content, aligning closely with the framework outlined in the Foundation’s report.

In recent testing, Nfinite has demonstrated barrier performance on paper capable of reaching or exceeding metallized plastic benchmarks while maintaining high fiber ratios and avoiding traditional plastic lamination. The company is actively scaling its pilot production facility in Waterloo, Ontario, and collaborating with global packaging leaders to commercialize high-barrier paper solutions.

The Foundation’s report underscores that viable paper-based flexible packaging does not yet broadly exist at scale and will depend on continued innovation across materials science, manufacturing, and supply chains. Nfinite agrees that collaboration among brands, suppliers, innovators, and policymakers will be critical to accelerating progress.

“Replacing single-use plastic in flexible formats will not happen through incremental tweaks,” said Galvez. “It will require breakthrough technologies that allow performance, recyclability, and material efficiency to coexist. We welcome the Foundation’s systems-level approach and its clear guardrails for responsible innovation.”

About Nfinite

Nfinite is a spin-off from the University of Waterloo commercializing high-barrier paper packaging enabled by its atmospheric pressure Spatial Atomic Layer Deposition (AP-SALD) coating process. Founded in 2021 and headquartered in Waterloo, Ontario, Nfinite is scaling its roll-to-roll manufacturing platform to enable fiber-based flexible packaging solutions designed to reduce reliance on single-use plastics. For more information, visit: www.nfinitepaper.com

About Ellen MacArthur Foundation

Launched in 2010, the Ellen MacArthur Foundation is an international charity accelerating the transition to a circular economy – one that is globally resilient and thrives within planetary boundaries. The current system for making, using, and disposing of plastics is a primary driver of waste and pollution. By addressing today’s most pressing challenges, our ambition is to deliver systemic change in the areas of **plastics and packaging, critical minerals, and retail**

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