

Public Consultation Response: Single-Use Plastics Directive

Strengthening the SUPD to Deliver Plastic Reduction, Environmental Protection and Industrial Innovation

Submitted by the [Natural Polymers Group](#), 17 March 2026

The Single-Use Plastics Directive (SUPD) has become one of the European Union's most effective environmental instruments, significantly advancing efforts to reduce single-use plastic waste and marine litter. At a time when plastic pollution continues to threaten ecosystems, biodiversity and human health, the Directive has provided regulatory clarity and a strong signal that unnecessary single-use plastics must be phased out.

The Natural Polymers Group fully supports the objectives of the SUPD. Reducing plastic leakage, preventing waste generation at source and protecting human health must remain central to EU environmental policy. Plastic items consistently rank among the most commonly found objects in marine litter, and once released into the environment, plastics fragment into microplastics, creating long-term contamination risks that are costly and complex to address. The urgency of tackling these impacts remains unchanged.

The SUPD has also shown that ambitious regulation can stimulate innovation. By restricting specific single-use plastic products in the public interest, the Directive has accelerated the development and scaling of alternative materials. A new generation of companies, represented in the Natural Polymers Group, is producing non-plastic solutions based on unmodified natural polymers derived from seaweed, agricultural residues, plant proteins and other non-food biomass streams. These materials are increasingly replacing single-use plastic products in applications such as cutlery, straws, beverage stirrers and food and beverage containers. Europe and the UK currently hold a technological leadership position in this field. Regulatory certainty has been instrumental in unlocking investment and industrial scale-up, and the revision of the SUPD should build on this success by strengthening clarity and consistency.

1. Protect the integrity of the plastic definition

The effectiveness of the SUPD depends on a clear, science-based and enforceable definition of plastic. Article 3 defines plastic as a 'material consisting of a polymer to which additives or other substances may have been added, and which can function as a main structural component of final products with the explicit exception of natural polymers that have not been chemically modified'. This distinction reflects scientific reality and aligns with the polymer definition under REACH. Unmodified natural polymers are polymerised in nature, retain their natural chemical structure and do not constitute synthetic plastics. They do not fragment into microplastics and do not pose any of the long-term pollution risks associated with fossil-based or chemically modified polymers.

The exclusion of unmodified natural polymers must therefore be maintained. Weakening this exemption would undermine legal certainty for a growing European industry providing genuinely non-plastic solutions aligned with the Directive's environmental objectives. At the same time, all synthetic and chemically modified polymers, including bio-based and biodegradable plastics such as polylactic acid (PLA), polyhydroxyalkanoates (PHA), modified starches and cellulose acetate must remain fully within the scope of the plastic definition.

Scientific evidence indicates that bio-based and biodegradable plastics, including PLA and PHAs, do not biodegrade under real marine conditions in a timeframe that would prevent environmental harm. Studies conducted in open sea conditions show that PLA remains largely intact after extended exposure, behaving similarly to conventional plastics, while unmodified natural polymers degrade significantly faster.¹ Further peer-reviewed research confirms that PLA's biodegradability in marine environments is insufficient to eliminate concerns about ocean pollution.² Laboratory hydrolysis under controlled conditions cannot be equated with demonstrated biodegradation in natural seawater environments.³

This evidence is particularly important in the context of packaging. Materials such as PLA and PHA are increasingly promoted as substitutes for conventional plastics in films, coatings and flexible packaging applications that are produced and consumed at extremely large volumes. Allowing such materials to fall outside the scope of the SUPD on the basis of biodegradability claims would therefore create significant environmental risks. At these scales, even limited degradation would result in substantial quantities of plastic and microplastic entering the environment.

For the purposes of the SUPD, which aims to reduce marine litter and prevent long-term pollution, performance under real environmental conditions must remain the decisive benchmark. Maintaining PLA, PHA and other synthetic or chemically modified bio-based polymers within the scope of the SUPD plastic definition is therefore essential to safeguard the Directive's environmental, marine and public health objectives, while ensuring that regulatory clarity continues to support the development of natural polymer materials that do not cause environmental harm.

¹ PLOS ONE (2023). Study demonstrating that PLA showed no chemical or physical degradation after 428 days under real marine conditions, behaving comparably to PP and PET, while natural fibres degraded completely within ~35 days: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0284681>.

² Springer Nature (2025). Study concluding that PLA's marine biodegradability is not sufficient to avoid concerns about plastic pollution in the ocean; PLA remained largely intact even when blended with PHA: <https://link.springer.com/article/10.1007/s13233-025-00393-8>.

³ See, for instance, industry communications relying on laboratory hydrolysis data rather than demonstrated marine biodegradation: https://www.natureworkslc.com/~media/files/natureworks/news-and-events/news%20posts/holland-bioplastics-news-post/2024_06_24_petopla_microplastics-executive-brief_pdf.pdf?la=en; <https://www.plaleaves.com/blogs/post/new-study-pla-does-not-produce-persistent-microplastics>.

2. Ensure Harmonised and Science-Based Verification

Clear scope must be matched by consistent enforcement. While the SUPD clearly exempts natural polymers that have not been chemically modified, there is currently no harmonised EU-wide technical methodology to verify whether chemical modification has occurred during processing. This creates risks of divergent interpretation across Member States, legal uncertainty for industry and uneven market surveillance. For instance, substitution practices in fibre-based packaging increasingly rely on synthetic coatings or treatments that may fall outside a narrow interpretation of 'plastic' while delivering similar functionality and environmental persistence. Examples include PFAS added to pulp, mineral dispersions, AKD sizing agents or synthetic varnishes and coatings. Ensuring that such materials are assessed consistently and in line with the objectives of the Directive requires robust and harmonised technical verification methods.

A relevant example of such an assessment already exists at Member State level. The Dutch Human Environment and Transport Inspectorate (ILT), with technical support from Wageningen University & Research (WUR), conducted a comprehensive regulatory evaluation of Notpla materials under the SUPD framework. This assessment considered not only the polymer structure of the material but also additives, coatings and other components providing functional barrier properties in fibre-based products. The approach illustrates how both material composition and functional and environmental performance should be assessed to ensure that products are evaluated consistently with the objectives of the Directive.

In parallel, scientific verification tools are being developed. Xampla, in collaboration with the UK National Physical Laboratory (NPL), has already developed a science-based methodology to verify whether natural polymer materials remain chemically unmodified during processing and can therefore be classified as plastic-free under SUPD and REACH definitions. The approach compares the chemical signatures of materials before and after processing using established analytical techniques and standard laboratory instrumentation, making it suitable for wider adoption.

Building on such work, we therefore call on the Commission to use its authority under the EU standardisation framework to mandate the European Committee for Standardisation (CEN) to develop a harmonised technical standard for material classification under the SUPD.

Such a standard would establish clear, science-based and reproducible methods to determine whether a material falls within the plastic definition under Article 3 and to distinguish unmodified natural polymers from chemically modified or synthetic polymers. This would provide legal clarity for manufacturers and competent authorities, strengthen enforcement across the Union and safeguard the integrity of the Directive.

3. Prevention and reuse first. Substitution where reuse is not feasible

The SUPD rightly prioritises prevention and reuse over single-use consumption. This hierarchy should remain central to the Directive. Expanding reuse systems and reducing overall consumption are essential components of a circular economy.

However, certain applications remain structurally difficult to shift to reuse systems due to hygiene requirements, logistical constraints or consumer behaviour patterns. Products consumed on the go, small-format items that are easily lost to the environment and items with low return rates present persistent challenges.

In such contexts, substitution away from plastic is critical. Where reuse cannot be sustainably or practically implemented, replacing plastic with non-plastic, naturally regenerative materials provide a direct and effective pathway to reduce microplastic leakage and long-term pollution risks. The SUPD revision should therefore continue to recognise substitution with non-plastic alternatives as a complementary strategy in hard-to-reuse contexts, while maintaining reuse as the preferred option wherever feasible.

4. Strengthening scope and reduction measures

Market restrictions under Article 5 have proven highly effective in driving innovation and market transformation. Where clear and scalable alternatives are available, prohibiting single-use plastic products remains the most effective mechanism to reduce environmental harm and internalise external costs.

The revision should therefore assess whether additional high-volume and litter-prone items, particularly in takeaway and on-the-go contexts, warrant inclusion in the list of restricted products. In many of these cases, non-plastic alternatives are already available, and extending prohibitions would accelerate the transition and ensure a level playing field.

The rapid market uptake of such solutions demonstrates that substitution is already well underway. For example, Notpla's seaweed-based material has replaced more than 35 million single-use items to date, while Xampla's plant protein materials are projected to replace up to 10 billion single-use plastic items over the next five years.

For product categories where alternatives already exist, such as single-use plastic products in dine-in and takeaway food service context, the present revision should establish a clear timeline for their phase-out.

Complementary measures can further support implementation. For example, extending the SUP marking requirement to all single-use takeaway food containers, rather than limiting it to beverage cups, will improve consumer awareness of plastic content and litter impacts.

Where prohibition is not feasible for certain product categories, stronger harmonised reduction measures under Article 4 should be considered. EU-wide consumption reduction targets, fiscal instruments reflecting environmental costs and strengthened

green public procurement can provide effective incentives for substitution and prevention. A harmonised EU framework is preferable to fragmented national approaches that risk distorting the internal market and slowing innovation.

5. Ensuring coherence across EU legislation

The long-term effectiveness of the SUPD depends on coherence with other EU legislation, in particular the Packaging and Packaging Waste Regulation (PPWR) and the Waste Framework Directive. Inconsistent treatment of materials across instruments creates legal uncertainty, delays investment decisions and weakens the environmental impact of EU policy.

The exclusion of unmodified natural polymers from the plastic definition under the SUPD must be consistently reflected across EU product and packaging legislation. The PPWR must provide an adequate and fit-for-purpose end-of-life framework for these materials, aligned with their non-plastic status and environmental characteristics.

Natural polymers are inherently regenerative materials that do not rely on conventional mechanical recycling to achieve circularity. Their optimal end-of-life pathway lies in biological processes, which safely return carbon to natural cycles without generating microplastics.

Who are the Natural Polymers Group

The Natural Polymers Group is a coalition of leading innovators committed to scaling nature-based, non-chemically modified substitutes to conventional plastics. Our members include pioneering companies such as Notpla, Loliware, Traceless, Xampla, ZeroCircle, MarinaTex, and PlantSea, all working to deliver safe, regenerative, and market-ready materials. We stand ready to provide evidence, case studies and technical expertise to support an ambitious and effective revision of the Single-Use Plastics Directive.

<https://naturalpolymersgroup.com/>

Members of the Natural Polymers Group

LOLIWARE

Designed to Disappear



Notpla



plant**sea**

traceless

Xampla



Additional organisations supporting this position

Cell2Green
recyclable biofoil

noriware