POSITION PAPER

Recycling Europe Tyres' policy recommendations on how to unlock circularity through tyre ecodesign

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Introduction

The Ecodesign for Sustainable Products Regulation (ESPR) establishes a framework to improve the environmental sustainability of products placed on the EU market, via setting design requirements. In this context, the ecodesign of tyres is of vital importance for circularity in the tyre value chain. Tyres are complex products with long value chains, and design choices made today determine whether their materials can be recovered and reused once they reach the end of their first life.

In simple terms, a tyre could be described as an article, but it is more than that. It could also be described as a safety device, the technical culmination of years of advanced engineering, and an essential economical enabler in a European Union where 75% of land freight is transported by road[1]. Therefore, it is obvious that tyre ecodesign affects all the stakeholders across its value chain, from manufacturers and retreaders, who extend the service life of tyres, to recyclers, who recover valuable materials from end-of-life tyres (ELTs)

With only around 50% of ELTs currently sent for recycling in the EU, increasing the circularity of the tyre value chain and supporting operators handling tyres at the end of their first life, requires targeted action. European tyre recyclers, represented by Recycling Europe, propose three key ecodesign measures:

[1] Trucks Fact Sheet 2025, ACEA, ACEA_trucks_fact_sheet_Feb2025.pdf

- **Improving recyclability through tyre design:** Tyres should be designed considering their recyclability at scale from the design stage to guarantee that more tyres can be recycled using current technologies and reduce the share that ends up being incinerated.

- **Introduce recycled content targets that reflect the reality of tyre recycling:** Such targets would both reward innovation in technologies that incorporate recycled materials into the production of new tyres, and create much-needed demand for recycled materials.

- **Ensure a transparent and practical Digital Product Passport (DPP):** A DPP that facilitates the transmission of information across the value chain would enable better tyre design and safer conditions for recyclers, positively affecting all operators of the value chain.

In this position paper, Recycling Europe Tyres outlines recommendations on how these measures can be implemented and explores the benefits they would bring to the entire tyre value chain.

1. Improving recyclability through tyre design

The recyclability of a tyre largely depends on the materials and substances used in its manufacturing. Design requirements introduced under Art. 5 of the Ecodesign for Sustainable Products Regulation (ESPR) should therefore ensure tyre composition – the materials used do not prevent or significantly hinder material recovery. Currently, three main material groups are of particular concern for tyre recyclers because they can significantly impact recycling operations.

- **Self-sealing compounds and noise reductions foams:** These materials can disrupt tyre granulation processes. The self-sealing tyres and the noise-reduction foams introduce additional compounds into what is otherwise a relatively uniform waste stream. Self-sealing tyres, designed to prevent air loss by sealing punctures in the tyre tread, use a sticky, viscous sealant compound layer inside the tyre. The same properties that make the sealant attractive in the use phase, also lead to the sealant coating

the blades of granulation equipment, increasing fire risks and posing safety hazards for both equipment and workers. Although these tyres still represent a minority of the market, their growing commercialisation suggests that their presence in ELT streams will increase, potentially leading to more ELTs diverted to incineration.

- **Aramid fibres in high performance tyres:** The use of Aramid fibres (aromatic polyamide fibres) in the manufacturing of high-performance tyres aims at improving tyre durability and extending their service life. However, while increasing tyres' strength, these fibres also make tyres more difficult to shred and granulate, reducing processing efficiency and limiting the environmental benefits of recycling.

- **Silica content in tyres:** Silica is used as a reinforcer in tyre manufacturing and does not impact the mechanical recycling of tyres. However, it can affect tyre pyrolysis by increasing the ash content in recovered carbon black (rCB). Alternative reinforcing agents with reduced impact on the rCB quality that do not increase the PAH content in the new tyre should be favoured.

Avoiding these groups of materials will effectively increase the share of tyres that can be effectively recycled at end-of-life, enabling higher circularity in the tyre value chain.

2. Coherent implementation of recycled content targets

Recycled content targets are one of the most effective regulatory tools to drive the use of recycled materials in new products. They are essential for increasing circularity across the value chains and, when applied correctly, can stimulate investments in the region to build the capacity to cover the demand created by them. A stable regulatory framework that brings security for future investments in the European recycled materials industries is the key to the creation of recycling capacity in the European Union. However, the implementation of recycled content targets must reflect the specific characteristics of the tyre value chain.

Tyres and the rubber have specific characteristics that distinguish them from other material streams. These particularities must be taken into consideration when setting recycled content targets that should address the main circularity challenge in End-of-Life tyres (ELTs). Currently, the steel contained in tyres, typically 12% to 21%, depending on the type, already has a well-established recycling market. For this reason, steel should be considered separately from the rubber fraction in tyres when setting recycled content targets. Targets should instead focus on the rubber fraction of tyres, where market demand remains limited. Without this distinction, manufacturers could meet recycled content requirements solely by using recycled steel, creating little or no demand for rubber recovered by ELTs.

Since recycled content targets should increase demand for ELT derived rubber (whether as rubber powder or as products from other recycling operations that use tyres as feedstock), targets for recycled materials should be kept separate from those for bio-based materials. While bio-based materials may reduce the environmental footprint of tyres, they do not advance circularity and risk maintaining the linear economy model that has already proven unsustainable.

3. A transparent and practical implementation of the Digital Product Passport (DPP)

The Ecodesign for Sustainable Products Regulation (ESPR) foresees the introduction of a Digital Product Passport (DPP) as a tool to ensure that relevant product information is available across operators in the value chain, as required in the regulation. General rules for the implementation of the DPP are outlined in Chapter III of the ESPR, while specifics will be described in the implementing acts specific to each product category.

Notably, Art. 9(1) requires that the information contained in the DPP be accurate, complete and up to date. With these requirements in mind, Recycling Europe Tyres has identified several elements that are essential to increase circularity in the tyre value chain.

First, for the DPP to be accurate and complete, it should foresee the compulsory reporting of all substances of concern[2] contained in the tyre. For European tyre recyclers, this is particularly important, especially for substances that may hinder the reuse or recycling of materials in the product in which they are present. In the case of tyres, it is essential to know where these substances are located within the product, as this information is crucial for optimising recycling processes to guarantee optimal material recovery. Similarly, the DPP should also clearly indicate specific tyre characteristics that may hinder recyclability or require additional processing, such as self-sealing tyres, noise-cancelling tyres, or any systems that include batteries like tyre pressure monitor systems that must be removed before shredding).

The implementation of DPP should also consider the implementation costs for operators. A harmonised technology solution for the DPP must be economically feasible to implement for all the actors of the value chain to guarantee its success. A minimum set of requirements for the carrier technology of the DPP must be clearly defined and must guarantee access to all the stakeholders in the value chain.

Conclusion

The Ecodesign for Sustainable Products Regulation has the potential to significantly improve circularity in the tyre value chain if implemented in close collaboration with the whole value chain. Designing tyres with recyclability in mind, introducing recycled content targets that reflect the realities of the value chain, and ensuring a transparent and practical implementation of the Digital Product Passport would increase the recovery of valuable materials from ELTs. By aligning product design, recycling processes and regulatory incentives, the EU can strengthen tyre recycling and increase the use of recycled materials in the manufacturing of new products, thereby reducing dependence on raw materials while building a stronger and more competitive European industry.

[2] Waste Framework Directive, Art. 2 (27)

Note to editor: Recycling Europe (formerly EuRIC) is the voice of Europe's recycling industry, including 83 national federations and companies across 24 EU & EFTA countries, and the UK. From metals and paper to plastics, textiles, tyres, ships, construction & demolition waste, WEEE and ELVs, our members transform waste into resources—powering Europe's circular economy, ensuring resource autonomy, and boosting competitiveness and sustainable industrialisation across the continent. For press-related enquiries, please contact Zoi Didili, Recycling Europe's Senior Communications Advisor, by email at zdidili@recyclingeurope.org or by phone at +32 (0) 489 09 46 02.