How the European packaging minimisation standard can fit EU regulation needs

ECOS recommendations on the future standardisation request to the revision of the European standard EN 13428

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Executive summary

Regulation (EU) 2025/40 on Packaging and Packaging Waste (PPWR) introduces strengthened and directly applicable requirements on packaging minimisation and on the prevention of excessive packaging. Article 10 and Annex IV require manufacturers and importers to ensure that packaging weight and volume are reduced to the minimum necessary to ensure functionality, while prohibiting packaging characteristics that aim only to increase the perceived volume of a product (e.g. double walls and false bottoms). The PPWR also introduces an enforcement-oriented logic: compliance must be demonstrable, comparable and verifiable across the market.

The existing standard EN 13428:2004, *'Packaging - Requirements specific to manufacturing and composition - Prevention by source reduction'*, was developed to support the requirements of the former Packaging and Packaging Waste Directive 94/62/EC. Its approach is based on qualitative self-assessment and checklists, and it explicitly treats product presentation/marketing and user/consumer acceptance as performance criteria. These features are not aligned with the PPWR's waste prevention intent and are in praxis an enabling factor of excessive packaging through subjective justifications. EN 13428 furthermore lacks the quantitative and reproducible methods anticipated by Article 10(3), such as approaches for maximum adequate weight/volume, empty space determination, and format-specific benchmarks.

This document analyses EN 13428 through the lens of requirements put forward by the PPWR Article 10 and Annex IV and provides recommendations to inform the preparation of the future standardisation request foreseen under Article 10(3). These recommendations aim to ensure that the revised EN 13428 becomes a compliance-oriented harmonised standard supporting market compliance and delivering measurable packaging waste prevention outcomes.

Purpose and scope

This document provides recommendations to support the preparation of the future standardisation request from the European Commission to the European Committee for Standardisation (CEN) foreseen under Article 10(3) PPWR. The recommendations focus on the revision of EN 13428:2004 *'Packaging – Requirements specific to manufacturing and composition – Prevention by source reduction'* to ensure that the revised standard is fit for the implementation of PPWR packaging minimisation requirements.

The scope of this document is limited to the standardisation needs directly linked to PPWR Article 10 and Annex IV. It does not address wider PPWR standardisation needs, e.g. recyclability performance grades, labelling, compostability - except where these interact materially with minimisation through Annex IV, e.g. design trade-offs to enable recyclability, recycled content, or reusability.

Why EN 13428 revision is critical for PPWR implementation

Packaging minimisation is a cornerstone of packaging waste prevention. Despite material lightweighting in many applications since the 1990s, packaging waste per capita has continued to increase, driven by market developments such as e-commerce, on-the-go consumption and takeaway packaging. In response, the PPWR strengthens packaging minimisation as a binding requirement and addresses practices that artificially increase packaging volume.

The effectiveness of Article 10 depends on the availability of robust and enforceable methods to determine whether packaging weight and volume are reduced to the minimum necessary. Without harmonised and reproducible assessment methods, implementation risks fragmentation across Member States, reduced legal certainty and inconsistent enforcement outcomes.

EN 13428:2004 is the main European standard addressing source reduction, but it was developed under Directive 94/62/EC and reflects a different policy and enforcement context, notably through the treatment of marketing, product presentation and user/consumer acceptance as performance criteria. The standardisation request foreseen under Article 10(3) PPWR will therefore be decisive in determining whether the revised standard becomes a compliance-oriented tool or remains a largely qualitative guidance document.

PPWR packaging minimisation requirements (Article 10 and Annex IV)

Packaging waste represents a significant and growing environmental challenge in the EU. Despite existing design requirements and recycling targets under previous legislation, packaging waste per capita continued to increase over time, driven by consumption growth, single-use packaging, e-commerce and on-the-go consumption[1].

The impact assessment accompanying the PPWR[2] identifies packaging minimisation as a key waste-prevention measure and concludes that stronger, binding design requirements are necessary to reverse this trend. Article 10 and Annex IV of the PPWR were introduced to address these shortcomings by ensuring that packaging placed on the market is reduced to the minimum necessary and by preventing design features that artificially increase perceived volume.

[1] "The annual packaging waste generated was estimated in 2018 at 173 kg per inhabitant in the EU , an increase of 27 kg compared to 2009", according to the European Commission's impact assessment accompanying the PPWR proposal.
[2] EU packaging waste reached approximately **180kg per capita**, and continues to increase under the baseline scenario despite existing design and recycling requirements. The European Commission's impact assessment projected a further **increase of almost 20% by 2030**, in the absence of additional measures

Core obligations in Article 10

Article 10 of the PPWR requires that, by 1 January 2030, packaging placed on the market is designed so that its weight and volume are reduced to the *minimum necessary* to ensure functionality, taking account of the shape and material from which the packaging is made. Packaging that does not comply with the performance criteria set out in Annex IV, as well as packaging characteristics intended solely to increase perceived product volume (such as double walls, false bottoms and unnecessary layers), is prohibited, subject to limited exemptions.

These obligations were introduced in response to evidence that previous EU packaging legislation did not reverse the long-term increase in packaging waste generation. The Commission's impact assessment supporting the PPWR identifies packaging minimisation as a key waste-prevention measure, estimating that strengthened design requirements could contribute to a reduction in packaging waste per capita of around 15 % by 2040 compared with 2018 levels[3].

Article 10(3) provides for the development or revision of harmonised standards laying down methodologies for the calculation and measurement of compliance with packaging minimisation requirements.

Annex IV: performance criteria and assessment documentation

Annex IV sets out the performance criteria that may justify why packaging weight and volume cannot be reduced further, focusing on essential functional requirements such as product protection, safety, hygiene, compatibility with manufacturing processes and logistics, and information provision.

Annex IV also establishes documentation expectations for minimisation assessments, requiring the outcome of the assessment, supporting calculations for minimum necessary weight and volume, and references to any evidence used.

In addition, Annex IV clarifies that packaging minimisation must be assessed in conjunction with other PPWR requirements, including reusability, recyclability and recycled content, recognising that such requirements may in some cases justify additional material use.

Recommendations for future standardisation request

EN 13428:2004 sets out a procedure to assess whether packaging weight and/or volume has been reduced to a minimum adequate level, based on a self-assessment approach using qualitative checklists and the identification of a "critical area" considered to prevent further reduction. This approach reflects the regulatory context of Directive 94/62/EC, where source reduction relied largely on operator self-justification rather than on harmonised, measurable, and verifiable assessment methods.

In light of the strengthened minimisation requirements under Article 10 and Annex IV of the PPWR, ECOS recommends that the standardisation request foreseen under Article 10(3) mandate a substantial revision of EN 13428, ensuring that the revised standard translates these legal requirements into measurable, verifiable and enforcement-oriented provisions suitable for market surveillance. An overview of the core recommendations is provided in Annex I.

[3] With an intermediate reduction target of 10% for 2035 'in order to ensure that the reduction efforts continue beyond 2030", according to the European Commission's impact assessment accompanying the PPWR proposal.

Mandate scope, objectives and deliverables

The standardisation request should clearly set out the objective of revising EN 13428 as a compliance-oriented standard that supports the determination and verification of *minimum necessary* packaging weight and volume in accordance with Article 10 of the PPWR. To this end, the request should require that the revised standard comprises of the following elements:

Element	Recommendation	Rationale
Scope and definitions	Align scope, terminology and definitions with Article 10 and Annex IV of the PPWR	Avoid subjective or non-essential justifications
Assessment methods	Provide clear methods to calculate and measure packaging weight and volume	Enable consistent compliance checks
Common formats	Develop approaches for the most common packaging types and formats, including benchmarks where appropriate	Allow comparison and enforcement
Documentation	Set minimum documentation requirements for assessment	Support market surveillance

Quantitative minimisation: Metrics, methods and benchmarks

EN 13428 does not establish quantitative methods for determining maximum adequate packaging weight or volume, maximum empty space or material thickness. While it refers in general terms to documented experience, tests or studies, it does not define calculation rules, parameters or boundary conditions that would enable consistent application or comparison across operators and Member States. As a result, assessment outcomes under EN 13428 are neither inherently comparable nor reproducible, and the standard does not provide a robust basis for systematic verification or enforcement.

To operationalise Article 10 of the PPWR, the revised standard must therefore move beyond qualitative checklist-based approaches and introduce quantitative, reproducible methods. The future standardisation request should require, at a minimum, the inclusion of clearly defined calculation and measurement methodologies that support consistent compliance assessment and effective market surveillance.

Element	Recommendation	Rationale
Packaging weight and volume	Set quantitative methods for maximum packaging weight and volume	Enable objective compliance checks
Empty space	Define a harmonised method to calculate allowable empty space	Ensure consistent interpretation
Material thickness	Set rules for wall thickness where relevant	Prevent unnecessary material use
Product-to-packaging ratios	Define weight and volume ratios across packaging levels	Support comparison and enforcement
Uncertainty	Define rules for uncertainty and reproducibility	Ensure reliable assessments
Benchmarks	Specify use of limits, ranges or curves for benchmarks	Avoid weak or permissive benchmarks

A key design consideration concerns whether benchmarks are expressed as absolute limits, ranges or performance curves. The standardisation request should ensure that any benchmarks developed can be applied in market surveillance and compliance contexts and do not enable "race to the bottom" interpretations. Where benchmarking across packaging formats is not immediately feasible, the revised standard should nevertheless provide a structured method for determining minimum necessary packaging based on defined tests and representative distribution scenarios.

Excluding non-essential criteria and preventing loopholes

Clause 5 of EN 13428 includes *product presentation and marketing* and *user or consumer acceptance* as performance criteria, which are further elaborated in Annex A through references to brand recognition, attractive presentation, specific container shapes, convenience expectations and purchase stimulation. These considerations go beyond the functional performance criteria set out in Annex IV of the PPWR and allow non-essential factors to be treated as limiting constraints in packaging minimisation assessments.

The standardisation request should therefore require the removal of these criteria from the minimisation assessment. They are incompatible with the PPWR's prohibition of packaging features that aim only to increase perceived volume and risk legitimising excessive packaging through subjective arguments. Where consumer information is necessary, it should be addressed solely under the Annex IV requirement to ensure information is provided to the user and treated as a functional constraint (e.g. minimum label size for legally required information), not as a marketing justification. The revised standard should also ensure that the limited exemptions recognised under Article 10(2) of the PPWR, such as intellectual property-related constraints, are not expanded through standardisation.

Replacing the 'critical area' logic with a definition of 'minimum necessary'

EN 13428 requires suppliers to identify a "critical area for source reduction", defined as the performance criterion that is considered to prevent further reduction of packaging weight or volume without compromising functional performance, safety or user/consumer acceptability. Where no such critical area is identified, further reduction is to be investigated. In practice, this approach places the selection and interpretation of the limiting criterion largely in the hands of the supplier, making the identified critical area the principal justification for the final packaging design and embedding a high degree of discretion in the minimisation assessment.

In light of the PPWR, the future standardisation request should require CEN to replace this concept with a more structured and transparent assessment method aligned with Annex IV. The revised approach should be based on clearly defined performance criteria and objective evidence, limit discretionary justification, and remain suitable for auditing, comparison and market surveillance while still allowing designs that meet safety, hygiene, protection and logistics requirements.

Element	Recommendation	Rationale
Performance criteria	Assess packaging against a closed list of essential performance criteria, as set out in Annex IV	Ensure alignment with the PPWR and avoid open-ended justifications
Evidence	Require documented evidence for each limiting criterion, such as test reports or validated calculations	Support objective and verifiable assessments

Design alternatives	Prevent single-criterion overrides by requiring consideration of alternative design and system options	Avoid unjustified overpackaging
Multiple constraints	Include decision rules where more than one criterion is limiting	Ensure transparent and consistent prioritisation
Method integrity	Ensure the methodology is auditable, comparable and authority-ready	Enable effective conformity assessment and enforcement

Definition and treatment of reusable packaging and durability trade-offs

EN 13428 was developed in a regulatory context in which packaging minimisation was assessed largely independently of recyclability and reuse performance requirements. By contrast, the PPWR explicitly recognises that minimisation must be assessed alongside requirements for recyclability, recycled content and reusability, and that additional weight or volume may in some cases be necessary to meet durability and rotation requirements or to enable design choices such as mono-material solutions or the use of recycled content. Article 10(3) therefore allows differentiated treatment for reusable packaging. The standardisation request should reflect this by requiring a transparent and dedicated approach for documenting and justifying such trade-offs, ensuring that reusable formats are not disadvantaged by rules developed for single-use packaging, while preventing unjustified increases in material use.

Documentation, verification and market surveillance usability

PPWR Annex IV requires that the outcome of the minimisation assessment, the calculations performed, and evidence used (tests, studies, market research) are documented. The revised EN 13428 should include a harmonised documentation structure that can be used by market surveillance authorities, including clear definitions of evidence types and minimum quality requirements (e.g. acceptable test standards, sample sizes, validity periods) and reproducibility of requirements for calculations and assumptions (distribution scenario, product properties, tolerances).

The standardisation request could also benefit from addressing usability: EN 13428 has been criticised[4] as not user-friendly and enabling too many deviations. It leaves too much room for justifying oversized packaging, hence disempowering national market surveillance[5]. A revised standard should support consistent use by producers and authorities through clear decision logic and unambiguous terminology.

[4] EN 13428 performance criteria are set by the manufacturer and lack clear, measurable decision logic, making consistent application and enforcement difficult and potentially enabling excessive packaging under broad interpretations. Independent analyses argue that enforcement bodies can only check procedural compliance, not whether packaging could have been reduced further, according to ANEC and ECOS analysis. "EN 13428:2004 [...] leaves too much flexibility under the so-called "key performance criteria" [that] undermine the effectiveness of the Standard", according to the European Commission's impact assessment.

[5] "The EN standard allows almost all conceivable reasons, including marketing and product presentation, consumer acceptance and a catch all 'other' category, to be used to justify large and heavy packaging. Consequently, there is no firm basis for regulatory (market surveillance) authorities in Member States", according to Eunomia's report on the assessment of options for reinforcing the PPWD.

Conclusion

The future standardisation request foreseen under Article 10(3) PPWR is a critical lever for ensuring that the revision of EN 13428 delivers a standard capable of supporting the PPWR's strengthened packaging minimisation requirements. ECOS recommends that the Commission mandates a substantial revision that removes non-essential criteria, introduces quantitative and reproducible methods, and provides documentation and verification requirements suitable for market surveillance. This will be essential to deliver measurable packaging waste prevention outcomes and ensure a level playing field across the internal market.

Annex I – Mapping: PPWR Article 10/Annex IV vs. EN 13428 clauses

This annex provides an overview of key PPWR minimisation requirements to the current structure of EN 13428:2004, highlighting the main misalignments that the future standardisation request should address.

PPWR requirements	Relevant PPWR clauses	EN 13428 current provisions	Implications for revision
Minimum necessary weight & volume	Article 10(1); Annex IV Part B	Scope; Clause 4.2; Annex A	Introduce reproducible calculation and measurement methods; shift from 'minimum adequate' to 'minimum necessary'
Prohibition of misleading/excessive features	Article 10(1)	No explicit prohibitions; implicit via checklist	Add explicit design prohibitions and criteria (double walls, false bottoms, unnecessary layers) aligned with PPWR
Closed list of performance criteria	Annex IV Part A	Clause 5 includes marketing & consumer acceptance; Annex A.3.6–A.3.7 elaborate	Remove marketing and consumer acceptance; align to Annex IV essential criteria
Maximum adequate limits for common formats	Article 10(3)	No max limits; no format catalogue	Mandate development of maximum weight/volume limits and, where appropriate, thickness/empty space benchmarks
Maximum empty space	Article 10(3)	Not defined; not measured	Introduce definitions and measurement protocol for empty space; specify tolerances
Documentation of assessment outcome	Annex IV Part B	Checklist-based approach; limited content requirements	Define harmonised documentation structure, minimum content, traceability of calculations and assumptions
Reusable packaging trade-offs	Article 10(3); Annex IV Part A(8)	No dedicated route for reuse; not linked to rotations	Introduce a reuse-specific minimisation pathway with durability/rotation evidence and trade-off documentation

References

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- Commission implementing and delegated acts under Regulation (EU) 2025/40 (PPWR), in particular:
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    - future delegated and implementing acts related to packaging minimisation methodologies and compliance assessment (Article 10(3) PPWR)
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