T.C.
TİCARET BAKANLIĞI
Uluslararası Anlaşmalar ve Avrupa Birliği Genel Müdürlüğü

2025 AİLE YILI

Sayı : E-79668890-749-00122413969
Konu : ESPR Kapsamında Tekstil Ürünlerine Yönelik Dijital Ürün Pasaportu (DPP) Çalışması

DAĞITIM YERLERİNE

Malumları olduğu üzere, 28 Haziran 2024 tarihinde yasalaşan Sürdürülebilir Ürünler için Eko-Tasarım Tüzüğü (ESPR) kapsamında Avrupa Komisyonu tarafından ürün bazlı eko-tasarım kurallarına dair mevzuat çalışmaları yürütülmektedir. Bu çerçevede, Avrupa Komisyonu Ortak Araştırma Merkezi (Joint Research Centre – JRC) tarafından hazır giyim sektöründe belirlenecek eko-tasarım kurallarına yönelik yürütülen çalışmalar kapsamında, *"ESPR Kapsamında Tekstil Hazır Giyim Ürünleri için Dijital Ürün Pasaportu İçeriği"* (Study on DPP Content for Textile Apparel Products under ESPR)" başlıklı çalışma dokümanı yayımlanmış olup ekte sunulmaktadır.

Diğer taraftan, söz konusu çalışma kapsamında tekstil sektörüne yönelik hazırlanacak ESPR etki analizi çalışmasına katkı sağlamak amacıyla paydaş görüşlerinin toplanmasına yönelik bir anket süreci başlatılmıştır. Bu çerçevede, görüşlerin 26 Haziran 2026 tarihine kadar aşağıdaki bağlantı üzerinden iletilmesi mümkündür:

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Ek: Study on DPP content for textile apparel products under ESPR

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JRC SCIENCE FOR POLICY REPORT

Study on DPP content for textile apparel products under ESPR

JRC recommendations to support DPP requirements in the framework of the ESPR Regulation

González-Torres, M., Arcipowska, A.

2026

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JRCXXXXXX

Print ISBN XXX-XX-XX-XXXXX-X doi:XX.XXXX/XXXXXX XX-XX-XX-XXX-XX-C
PDF ISBN XXX-XX-XX-XXXXX-X doi:XX.XXXX/XXXXXX XX-XX-XX-XXX-XX-N

Luxembourg: Publications Office of the European Union, 20XX [if no identifiers, please use Brussels: European Commission, 20XX or Ispra: European Commission, 20XX or Geel: European Commission, 20XX or Karlsruhe: European Commission, 20XX or Petten: European Commission, 20XX or Seville: European Commission, 20XX depending on your unit]

How to cite this report: European Commission, Joint Research Centre, Author(s), *Title,* Editors, Publisher, Publisher City, Year of Publication, https://data.europa.eu/doi/XX.XX/XXXXX (where available), JRCXXXXXX. [Always use the PDF/online doi in the citation, even for the print version of the publication.]

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Acknowledgements

This report has been prepared based on input from two service contracts and on the information and analysis in the ESPR preparatory study for textile apparel products.

Regarding the service contracts, the consortium TNO and Maki Consulting, developed the method for setting up the DPP content under the ESPR framework. The consortium team — in particular Kartik Chawla and Theodor Chirvasuta from TNO — also tested the method, and several of their findings have been incorporated into this report. In addition, the report integrates the output from the readiness check performed by Circularity HUB — in particular by Kathy Fang and Natalia Lopez— based on interviews to collect the current practices for data flow and reporting of actors through the value chain.

The report also relies on the analogous study on DPP content for iron and steel products under ESPR by Aleksandra Arcipowska and Sara Blanco for the generic sections on DPP cross-sectoral topics.

The authors would like to thank colleagues in the Directorate-General for Environment (DG ENV) and in the Directorate-General for Internal Market, Industry, Entrepreneurship (DG GROW) for their support and valuable comments throughout the study.

The authors also thank the colleagues working on other tasks within the ESPR preparatory study for textile apparel products, for contributing with their feedback and helping to ensure the coherence and consistency of the framework. Finally, the authors thank Anna Atkinson for proofreading the document.

Authors

González-Torres, M., Arcipowska, A.

1. Introduction

The Digital Product Passport (DPP), introduced under the Ecodesign for Sustainable Products Regulation (ESPR) [1] as a central instrument to operationalise information requirements, aims to enhance transparency, traceability, and sustainability in EU market products. By providing harmonised, machine-readable information, it is intended to support various policy objectives such as market surveillance, consumer information, circular economy strategies, and industrial competitiveness. However, achieving these goals requires identifying relevant data points in line with ESPR requirements and compatible with a scalable and interoperable data ecosystem.

This report forms part of the preparatory study supporting the future delegated act on textiles apparel products. Its purpose is to propose a structured set of DPP content requirements, building on the ESPR framework, existing EU disclosure obligations, industry practices and a use-case-driven methodology (Chawla et al., 2026). The work also draws on the outputs of the external support contracts and ongoing standardisation activities. The findings presented require validation through extensive stakeholder consultation and subsequent refinement during the impact assessment phase of the delegated act.

The scope of this study is limited to defining and structuring the data to be included in the DPP. Topics such as the technical architecture of the DPP system, data carriers, data governance models, access-rights management, registry and web portal design, and the implementation of decentralised data storage—although essential for the full functioning of the DPP—are explicitly out of scope of this analysis. Moreover, a cost-benefit analysis of the data points recommended in this report should follow, together with the development of new dictionaries to be specifically used within the ESPR framework to ensure they remain publicly and freely available during the period mandated for legal compliance and enforcement.

2. Context and legal basis

The DPP is anchored in the ESPR, which entered into force on 18 July 2024 and establishes a horizontal framework on sustainability and circularity of almost all physical goods placed on the EU market. Under this framework, the Commission is empowered to adopt delegated acts setting out performance and information requirements, irrespective of whether they are manufactured within the Union or imported from third countries.

In the Regulation, the DPP is introduced as the primary mechanism for implementing and operationalising ESPR information requirements for products in a digital, structured, and accessible manner (Article 9 and Annex III ESPR). Such information goes beyond consumer information and includes compliance documentation and information since the DPP is also the default digital tool to make such information digitally available for market surveillance (see Article 4(6)(iii) and 36(3) ESPR regarding technical documentation) It would hence enable the transitioning from traditional methods including physical technical documentation to the digitalisation of product information, improving the accessibility, consistency, and traceability of existing information requirements. Nevertheless, its principal innovation lies not only in digitalisation, but also in the harmonised

[1] Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC [link]

structuring of information and the definition of differentiated access rights for various user groups, including consumers, market surveillance authorities, economic operators, and other stakeholders.

ESPR does not regulate entire supply chain data collection but offers the DPP to disclose structured and harmonised information of the products under the scope of relevant delegated acts. Economic operators and other actors along the value chain may choose to align with the semantic and technical infrastructure of the DPP to facilitate the circulation of product-related information, but such alignment is not mandated beyond the requirements set out in the Regulation and the relevant delegated acts (see notably Article 38 ESPR).

Moreover, the DPP may function as a form of digital product identity in the future, capable of linking information required under different pieces of EU legislation, as well as voluntary data provided by manufacturers or other actors. In this way, the DPP has the potential to support multiple policy objectives simultaneously, including market surveillance, consumer information, circular economy strategies and industrial competitiveness beyond sustainability and circularity, while helping to reduce duplication of reporting obligations over time.

Textile apparel products have been explicitly listed in the Commission's first ESPR Working Plan (2024–2030[2]) as a priority reflecting their strategic importance for circularity, resource efficiency and decarbonisation objectives. Consequently, a DPP is expected to be introduced for this product group through a forthcoming delegated act (tentatively in 2027) under the ESPR.

2.1. Legal requirements under ESPR

2.1.1. Roles and responsibilities

Under the ESPR, compliance with product-specific ecodesign requirements, including information requirements implemented through the DPP, is ensured through obligations to economic operators in accordance with their role in the supply chain, as defined in the Regulation.

In line with the allocation of responsibilities used in other EU product legislation, primary responsibility for ensuring that the DPP is available lies with the placer on the market meaning the manufacturer[3] (in exceptional cases the economic operator putting the product into service in the EU) or, where the manufacturer is not established in the Union, with the importer[4]. They are also responsible for ensuring the DPP is accurate, complete, and up to date and for uploading at least the unique identifier in the digital registry. Where an authorised representative has been designated in accordance with the Regulation, that representative may perform specific tasks on behalf of the manufacturer within the limits of the mandate conferred, without assuming overall responsibility for product compliance unless explicitly provided for in the Regulation.

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3 'manufacturer' in the ESPR framework means any natural or legal person that manufactures a product or that has a product designed or manufactured, and markets that product under their name or trademark

4 'importer' in the ESPR framework means any natural or legal person established in the Union that places a product from a third country on the Union market

Distributors[5] make products available on the market after those products have been placed thereon by the manufacturer or importer and have a more limited role under the ESPR. Before making a product available on the market, distributors must verify that the product complies with the applicable requirements, including the presence of required information and, where applicable, access to a DPP as required by a delegated act. Distributors must not make products available on the market if they know, or have reason to believe, that the product does not comply with the applicable ESPR requirements.

Other actors (e.g. online marketplaces, dealers[6], fulfilment service providers[7]) do not assume primary responsibility for product compliance or DPP content, which remains with manufacturers or importers, unless explicitly provided for in the Regulation.

The ESPR Article 2 also defines the term 'digital product passport service provider'; understood as a natural or legal person that is an independent third-party authorised by the economic operator which places the product on the market or puts it into service and that processes the digital product passport data for that product for the purpose of making such data available to economic operators and other relevant actors with a right to access those data under this Regulation or other Union law.

The ESPR further requires that information made available through the DPP be accurate and consistent with the product placed on the market, and that it be made available in the manner and at the time specified in the relevant delegated act. Detailed obligations regarding the content, timing, accessibility, and updating of DPP information are to be defined at product-group level through delegated acts.

2.1.2. DPP content requirements

The scope of data disclosures addressed by this report is grounded in the ESPR provisions on the DPP, notably Article 9, which establishes the DPP framework and sets out the types of requirements that may be defined through delegated acts. These provisions are complemented by Annex III, which enumerates the categories of information that may be required to be made available through the DPP pursuant to Article 9(2)(a), including:

- product and producer identification and information, Annex III (b-d), (g-k);
- product-specific information regarding ecodesign product aspects and parameters, including information requirements on substances of concern, and related information, Article 7(2) (b) and Article 7(5); as well as product information required under other Union law – Annex III (a);

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5 'distributor' in the ESPR framework means any natural or legal person in the supply chain, other than the manufacturer or the importer, that makes a product available on the market

6 'dealer' in the ESPR framework means a distributor or any other natural or legal person that offers products for sale, hire or hire purchase, or that displays products, to end users in the course of a commercial activity, including through distance selling; and includes any natural or legal person that puts a product into service in the course of a commercial activity

7 'fulfilment service provider' in the ESPR framework refers to Regulation (EU) 2019/1020 and means any natural or legal person who offers, in the course of commercial activity, at least two of the following services without having ownership of the products involved: warehousing, packaging, addressing and dispatching.

— compliance documentation and information under the ESPR or required under other Union law – Annex III (e);

— information requirements regarding user manuals, instructions, warnings or safety information under other Union law applicable to the relevant product group - Annex III (f).

2.1.2.1. Product and producer identification

This category covers information elements that enable the unambiguous identification of a product and its association with the relevant actors and locations through the DPP. Product identification constitutes a foundational element of the DPP under the ESPR, as it allows product-related information to be reliably linked, accessed and reused in a digital and interoperable manner.

The ESPR establishes overarching requirements for the use of three types of unique identifiers, which function as technical and semantic references linking DPP data to the relevant entities:

— *unique product identifier (UPI)*[8]*:* a unique string of characters used to identify a product and to enable a digital link to the corresponding DPP. The UPI serves as the primary reference point for associating all DPP-related information with a specific product.

— *unique operator identifier (UOI):* a unique string of characters used to identify an economic operator involved in the product's value chain, supporting the attribution of responsibilities and the linking of product information to the relevant actor.

— *unique facility identifier (UFI):* a unique string of characters used to identify locations or facilities involved in the product's value chain, where such identification is relevant to the information requirements defined in a delegated act.

Given their cross-sectoral relevance, these identification elements are subject to substantial standardisation input, notably through the work of the Joint Technical Committee 24 (JTC24) of CEN-CENELEC, which develops horizontal standards for identifiers, data structures, and digital interoperability.

2.1.2.2. Product and producer information

This category covers descriptive information about the product and the economic operators responsible for it. It complements the product identification by supplying the substantive attributes needed to describe what the product is and who is responsible for placing it on the Union market.

Depending on the product group and the requirements laid down in the relevant delegated act, this category may include, inter alia:

— the product name, model designation and version, enabling clear differentiation between product variants;

— the identity and contact details of the manufacturer or other responsible economic operator, in line with the allocation of responsibilities under the ESPR;

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[8] UPIs, as the rest of the data points, can be set at model, batch or item level (see section 2.1.4.1). Defining UPIs at coarser granularity (e.g., batch or model) does not compromise their uniqueness; each remains a distinct digital link to a single DPP containing shared information for all associated items.

— information on the manufacturing site or other relevant facilities, where such information is required to support compliance or enforcement;

— other descriptive attributes necessary to distinguish between configurations, batches or versions of a product.

Unlike product identification, which relies on unique identifiers serving as references, product and producer information consists of descriptive, human-readable and machine-readable attributes that provide context and meaning to the identifiers used in the DPP. The precise scope, level of detail and presentation of this information are to be determined at product-group level through delegated acts, taking into account existing information requirements under Union law and the need to avoid unnecessary duplication of disclosures.

2.1.2.3. Product-specific information regarding ecodesign product aspects and parameters and related information

ESPR provides the legal basis for defining product-specific information requirements that may be made available through the DPP via delegated acts. These information requirements are intended to support the sustainability, circularity and effective use of products, while considering the diversity of product groups covered by the Regulation.

In particular, Article 7(2)(b) allows delegated acts to require the provision of the following types of information, where relevant for the product group concerned:

— *Information relating to ecodesign product aspects (listed in Article 5(1)) and parameters (referred to in Annex I)* that are relevant to sustainability and circularity, such as durability, reparability, reusability, upgradability, energy and resource efficiency.

— *Information for users and other actors on installation, use, maintenance and repair* to support correct implementation. Where relevant, it may also include information on the installation of third-party operating systems, as well as guidance supporting refurbishment, remanufacturing or other life-extension strategies.

— *Information for treatment facilities* addressed to operators involved in end-of-life treatment, including disassembly, reuse, refurbishment, recycling or disposal. This information may support safe handling, component separation and material recovery, thereby contributing to high-quality recycling and alignment with waste management objectives.

— *Other information influencing sustainable product choices and handling,* allowing for the inclusion of additional disclosures that may influence sustainable purchasing by customers or the handling of products by actors other than the manufacturer.

The relevance, scope and level of detail of product-specific parameters and information vary significantly across product groups. Thus, their identification is clearly linked to the output of the preparatory studies, which assess product characteristics, environmental and socio-economic impacts, technical feasibility and policy priorities.

2.1.2.4. Information on substances of concern

Information on substances of concern (SoC), as defined in Article 2(27) of the ESPR, is required to be disclosed through the DPP.

Pursuant to Article 7(5) of the ESPR delegated acts may require the disclosure, where proportionate and relevant, of information such as:

— the identification of SoC present in the product;

— information on their presence or location within the product, where necessary to support safe use, repair, refurbishment or end-of-life treatment; and

— information relevant for treatment operators, including recyclers, to enable appropriate handling or separation.

The scope, level of detail and format of SoC-related disclosures are to be determined at product-group level, taking into account existing obligations under Union chemicals and waste legislation, the availability of data, and the intended use of the information. The ESPR approach aims to complement existing disclosure requirements and to provide targeted, actionable information, rather than comprehensive chemical inventories. Thus, this category is also highly dependent from the outputs of the dedicated preparatory studies.

2.1.2.5. Compliance documentation and information under the ESPR

The ESPR also provides the legal basis for the inclusion of compliance-related documentation and information in the DPP. This category encompasses essential records demonstrating that a product satisfies applicable ecodesign requirements before being placed on the market or put into service.

While the inclusion of compliance information related to other EU law is also possible, when talking specifically about requirements under ESPR, this category includes:

— *EU Declaration of conformity:* manufacturer's statement confirming compliance with ESPR, among other applicable regulations, and fulfillment of ecodesign requirements.

— *Technical documentation:* evidence supporting compliance with ecodesign requirements, including for instance manufacturing drawings, results of measurements, design calculations or test reports.

— *Certificates:* formal certifications or approval decision issued from notified bodies verifying compliance.

These elements ensure the DPP functions as a verifiable compliance tool, enabling market surveillance and regulatory enforcement. Delegated acts may introduce additional compliance-related data points for specific product groups.

2.1.2.6. Information required under other Union law

Annex III(a) of the ESPR provides legal basis to require that *information already mandated under other applicable Union legislation* for a given product group be made available through the DPP. This inclusion is optional and must be explicitly specified in the relevant product-specific delegated act.

In addition, Annex III(e) and Annex III(f) enable the inclusion in the DPP of:

— compliance documentation, such as the EU declaration of conformity or elements of technical documentation required under other Union legislation; and

— information intended for the user', including manuals, instructions for use, warnings or safety information that manufacturers are required to provide under other applicable Union acts.

Taken together, these provisions allow the DPP to function, where appropriate, as a digital access point for information already required under Union law, without creating new substantive information obligations and duplication.

This identification on the relevant information under this category is also clearly linked to the preparatory studies which include systematic review of existing and forthcoming Union legislation applicable to the product group.

2.1.3. Non-functional information

In addition to specifying the categories of information to be made available through the DPP, the ESPR establishes a set of non-functional requirements that apply to the specification and provision of DPP data. These requirements do not concern the substantive content of the information as such, but rather the qualities that DPP data must exhibit in order to ensure:

— *Clarity, accessibility and purpose-oriented usability*, Art.7(2)(b)-(c) and Art 9(1) and 9(3).

  The ESPR requires that information requirements in the DPP be clear, easily understandable and appropriately tailored to the characteristics of the product and intended recipients. They need to reflect differences in product complexity, use patterns and value chains, as well as the needs of different user groups, such as consumers, professional users, market surveillance authorities, and other economic operators. In addition, the ESPR requires that DPP ensures accessibility, verification and traceability along the value chain. The data shall be accurate, complete and up to date.

— *Interoperability and format requirements*, Art 10(1)(d).

  The ESPR mandates that DPP data be based on open standards, use interoperable and machine-readable formats, be structured and searchable as appropriate, and be transferable through open and interoperable data exchange networks without vendor lock-in. Interoperability aspects (technical, semantic, organisation) are covered under the standardisation work (see section 2.2.1)

— *Data retention*, Art 9(2)(i).

  The ESPR requires that DPP information remain available over time, at least for the expected lifetime of the product, in order to support long-term objectives such as repair, reuse, recycling, and market surveillance. The period for which DPP should be available is to be specified in delegated acts.

2.1.4. DPP system information

DPP Data System Information (DSI) refers to system-level requirements governing the functioning of the DPP, independently of the product-specific information content defined in product-group delegated acts. DSI requirements concern how the DPP operates as a digital system rather than what information it contains.

The main DSI elements addressed in this section are:

— *Granularity levels of the DPP,* Art 9(2)(d);

— *Access rights and role-based data visibility,* Art 9(2)(f);

— *Rules on governance*, Art. 9(2) (g-h), and

— *DPP Registry and Web portal,* Art.13 and Art 14.

Determining detailed DSI requirements involves a combination of analysis of existing data-sharing practices within relevant value chains and assessment of comparable digital systems, in order to ensure that the DPP system addresses practical needs and constraints while remaining technically feasible, proportionate and respecting confidentiality of sensitive information.

The ESPR does not prescribe the technical design of the DPP system. Instead, it relies on standardisation and technical implementation to operationalise requirements such as role-based access models, data exchange mechanisms, data structure and semantic interoperability, machine-readable formats, and cross-sector compatibility. These standards are expected to form the technical foundation for compliance with the ESPR requirements, as outlined in section 2.2.1.

2.1.4.1. Granularity of the DPP

The level of granularity refers to the detail at which product-related data are collected, stored, and tracked in the DPP context. Article 9(2)(d) of the ESPR provides that product-specific delegated acts to specify the appropriate level of granularity at which a DPP is to be established. This should reflect the needs of market surveillance, circular economy-related use cases, and traceability, while avoiding unnecessary administrative or technical burden.

Depending on the product group and policy objectives, the DPP may be established at product model level, batch or lot level, or individual item level. While their definitions will be established through delegated acts adopted under Art. 4[9], Recital 33 provides indicative descriptions:

— *"The term 'model' usually refers to a version of a product of which all units share the same technical characteristics relevant for the ecodesign requirements and the same model identifier,"*

— *"the term 'batch' usually refers to a subset of a specific model composed of all products produced in a specific manufacturing plant at a specific moment in time"* and

— *"the term 'item' usually refers to a single unit of a model."*

Evidence from preparatory studies, sectoral pilots, and related research indicates that granularity is a key cost driver in the implementation of digital product information systems[10]. Requirements that diverge from existing industry practices — such as moving from model-level to item-level granularity where such practices are not already in place — can significantly increase implementation complexity and compliance costs.

Accordingly, where possible, DPP granularity requirements should be aligned with established industrial traceability practices in the relevant value chain. Such alignment can facilitate implementation, reduce compliance costs, and support interoperability.

[9] ESPR Article 9(2) "*The requirements related to the digital product passport laid down in the delegated acts adopted pursuant to Article 4 shall, as appropriate for the product groups covered, specify the following:*
…whether the digital product passport is to be established at model, batch or item level, and the definition of such levels;"

[10] Resulting from the series of interviews with industry under the ESPR preparatory study for iron and steel.

2.1.4.2. Access rights and role-based data visibility

Article 9(2)(f-g) of the ESPR allows product-specific delegated acts to specify which actors may access which categories of information made available through the DPP. This enables the implementation of role-based data visibility, whereby access to certain data fields may be restricted to authorised actors depending on their role in the value chain and the intended use of the information.

Such differentiation of access rights supports the objectives of the ESPR by balancing transparency, effective enforcement, and the protection of confidential business information. The Regulation itself does not define access categories or access levels, nor does it prescribe a fixed access model. Instead, the allocation of access rights is to be determined at product-group level through delegated acts, taking into account proportionality, data protection requirements, and the protection of trade secrets.

Moreover, the Regulation does not prescribe how access rights should be implemented technically. The operationalisation of role-based access control is therefore expected to be addressed through standardisation and technical implementation, informed by the requirements set out in delegated acts.

The ESPR explicitly refers to a broad range of actors, including customers, manufacturers, importers, distributors, dealers, professional repairers, independent operators, refurbishers, remanufacturers, recyclers, market surveillance authorities, customs authorities, civil society organisations, trade unions, and other relevant actors, who shall have free-of-charge and easy access to the DPP in accordance with the access rights defined in the applicable delegated act.

2.1.4.3. Rules on data governance

The ESPR enables product-group delegated acts to define rules governing the updating, maintenance, and management of information made available through the DPP, with the objective of ensuring that DPP information remains accurate, relevant and reliable throughout the product lifecycle.

In particular, delegated acts may specify, where relevant for a given product group:

— responsibility for updates, i.e. which economic operator(s) or other actor(s) are responsible for creating, validating, and updating specific categories of DPP information;

— update triggers, i.e. the events or conditions that require an update (e.g. placing on the market, repair/refurbishment operations, component replacement, change of ownership, or end-of-life treatment, where relevant);

— timing and frequency, including deadlines for updating information after a triggering event, taking into account proportionality and the nature of the information concerned; and

— change recording and traceability, including requirements to keep update logs, record timestamps and responsible actors, and — where necessary for enforcement or traceability — retain previous versions of specific data fields.

However, the ESPR does not prescribe uniform technical solutions for version control, workflow management, or data governance. The operationalisation of update mechanisms and maintenance processes is therefore expected to be supported by standardisation and technical implementation,

ensuring compliance with the Regulation's horizontal requirements on system functionality (including access control, interoperability, integrity, and availability of DPP data).

2.1.4.4. DPP registry and Web portal

The ESPR establishes a centralised EU Digital Product Passport Registry[11], referred to in Article 13, which stores in a secure manner the unique identifiers and a limited set of data specified in the product-specific delegated acts. Manufacturers and other responsible economic operators must:

- register each DPP in the EU Registry,
- ensure a verifiable link between the registry entry and the data carrier affixed to the product, and
- maintain the accuracy and accessibility of the registered data for the required retention period.

In addition, the Commission will set up an ESPR Web Portal[12] (Art.14), which will provide both public access to non-restricted information and role-based access to protected data fields according to the access rights defined in the relevant delegated acts. The Web Portal will function as the central user interface for retrieving, searching and comparing DPP information across product groups.

2.1.5. Data carrier

The ESPR requires that every DPP be accessible through a data carrier that is physically linked to the product, its packaging, or documentation. The legal requirements for the data carrier are set out primarily in Article 10(1) (a–c), which ensure that the DPP can be accessed reliably throughout the product's life cycle.

The ESPR sets functional requirements for the data carrier but does not prescribe specific technologies. Instead, the Regulation establishes a framework within which standardisation activities — in particular those carried out by CEN/CENELEC/JTC 24 — are expected to develop technical standards supporting implementation, including standards for identifiers, data carriers, and interoperability.

The delegated acts based on these standards will specify for each product group one or more types of data carrier to be used, without prejudice to technological neutrality. Moreover, they may also specify where the data carrier must be located (e.g. on the product, on a nameplate, on the packaging, or in accompanying documentation). Where relevant, delegated acts may also include durability and readability requirements for the data carrier, ensuring that it remains readable for at least the period during which the DPP must remain accessible.

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[11] Refers to the digital ESPR registry that the Commission shall set up until 19 July 2026 and which shall store in a secure manner at least the unique identifiers and in case of products intended to be to be placed under the customs procedure 'release for free circulation', the registry shall also store the commodity code. Additionally, the registry shall store the unique identifiers for batteries as referred to in Article 77(3) of Regulation (EU) 2023/1542. In its relation to its responsibility to set up and manage the registry, the Commission shall be regarded as controller of the registry. The implementation arrangements of the registry will be set up through an implementing act.

[12] Refers to the publicly accessible web portal that the Commission shall set up and manage. This DPP Web Portal shall allow stakeholders to search for and compare data included in digital product passports in a manner that is consistent with their respective access rights.

2.2. Harmonization effort

The implementation of the DPP under the ESPR requires a coordinated harmonisation and standardisation effort to ensure that DPP systems are interoperable, secure and usable across product groups and sectors. This effort is essential to translate the legal requirements of the ESPR and its delegated acts into operational, technically consistent digital systems.

Two complementary pillars underpin this harmonisation effort:

— *standardisation of the DPP digital infrastructure,* see Section: 2.2.1, and

— *the development of common vocabularies*, see: Section: 2.2.2

to ensure semantic interoperability.

2.2.1. Standardisation work of the DPP digital infrastructure

To ensure that the DPP system is secure and interoperable across the Union, European standardisation organisations are developing a set of core technical standards supporting the implementation of the ESPR DPP framework. This work is being undertaken by the CEN-CENELEC Joint Technical Committee 24 (JTC24).

JTC24 develops horizontal standards addressing foundational technical aspects common to all DPP systems. The standardisation work is structured around the following technical modules:

— Unique identifiers

— Data carriers and links between physical product and digital representation

— Access rights management, information, system security, and business confidentiality

— Interoperability (technical, semantic, organisation)

— Data processing, data exchange protocols, and data formats

— Data storage, archiving, and data persistence

— Data authentication, reliability, integrity

— Application Programming Interfaces (APIs) for the product passport lifecycle management and searchability

These elements constitute the technical baseline upon which all DPP systems are expected to be built, independently of product-specific content requirements. More information, including the list of standards that will be made available in 2026, can be found in the standardisation request (Commission Implementing Decision)[13].

[13] COMMISSION IMPLEMENTING DECISION on a standardisation request to the European Committee for Standardisation, the European Committee for Electrotechnical Standardisation, and the European Telecommunications Standards Institute as regards digital product passports in support of Union policy on ecodesign requirements for sustainable products and on batteries and waste batteries. Available at this link.

2.2.2. Common and product-specific vocabularies

A Common Vocabulary in the ESPR framework and the wider DPP ecosystem is intended to act as a shared semantic anchor from which all product groups inherit definitions and properties. Its purpose is to provide both a unified definition of DPP properties (i.e. metadata describing the properties) and a set of core concepts defining fundamental product information.

First, a Common Vocabulary defines what constitutes a DPP property, requiring any ontology implementing the conceptual vocabulary to follow a common structural model. The definition of a DPP property is provided by the CEN/CENELEC standardisation work carried out under JTC24, in particular by Module 4 ('Interoperability Framework') [14]. In addition, JTC24 Working Group 4 specifies how these properties are handled at system level, including aspects related to system interoperability and reusability of data artefacts, data exchange protocols, data storage, archiving and persistence, and APIs supporting DPP lifecycle management and searchability.

Second, a Common Vocabulary would define the semantics of fundamental product information, corresponding to ESPR Annex III information requirements excluding point (a), i.e. excluding performance metrics. These correspond to a stable set of cross-sector concepts related to products, actors, facilities, processes and compliance information. The CEN/CENELEC standardisation work carried out under JTC24, in particular by Working Group 2 (WG2) ('Unique identifiers and data carriers'), defines the principles and specifies the requirements and guidelines for unique product identifiers, unique economic operator identifiers and unique facility identifiers used in digital product passports. This work does not attempt to invent new terminology; instead, WG2 collects and harmonises the principles from the most widely used international vocabularies—such as GS1 (for product and operator identifiers), Schema.org (for generic product descriptors), UN/CEFACT[15] (for supply-chain semantics), and existing ISO and IEC terminology. Then, by identifying representative semantic elements for each information requirement from widely adopted vocabularies and ontologies used across industries, these could apply horizontally for all product groups.

Third, the interpretations and implementations of specific performance concepts (e.g. durability or recyclability) may differ at the product group level. Therefore, while generic definitions of the performance concepts may provide a starting point scope indication, product-specific ontologies address how the performance concepts are quantified for the respective industry. Initially, all performance concepts definitions are inherited first from the ESPR legal text and the guidance report by Rodríguez-Manotas et al., (2025) (for circularity aspects only), and then from the industry standards and commonly used ontologies. A summary overview is provided in (Chawla et al., 2026).

Fourth, to ensure wide adoption and provide a reliable basis for legal compliance and enforcement, all DPP properties should be linked to publicly and freely available dictionaries in which their definitions are explained. The visibility and accessibility of these definitions establish a shared reference point for future interpretation, both for compliance assessment and sustainability reporting.

In practical terms, a Common Vocabulary functions as the backbone that ensures consistent data exchange, while each product-group-specific vocabulary acts as a custom layer tailored to the

[14] Also related to the JTC24 work on 'data dictionaries'.

[15] United Nations Centre for Trade Facilitation and Electronic Business

needs of the sector without compromising overall coherence. Section 8 presents how common and product-specific vocabularies are proposed to be used to refer to the textiles DPP data points.

3. Methodology for definition of DPP content

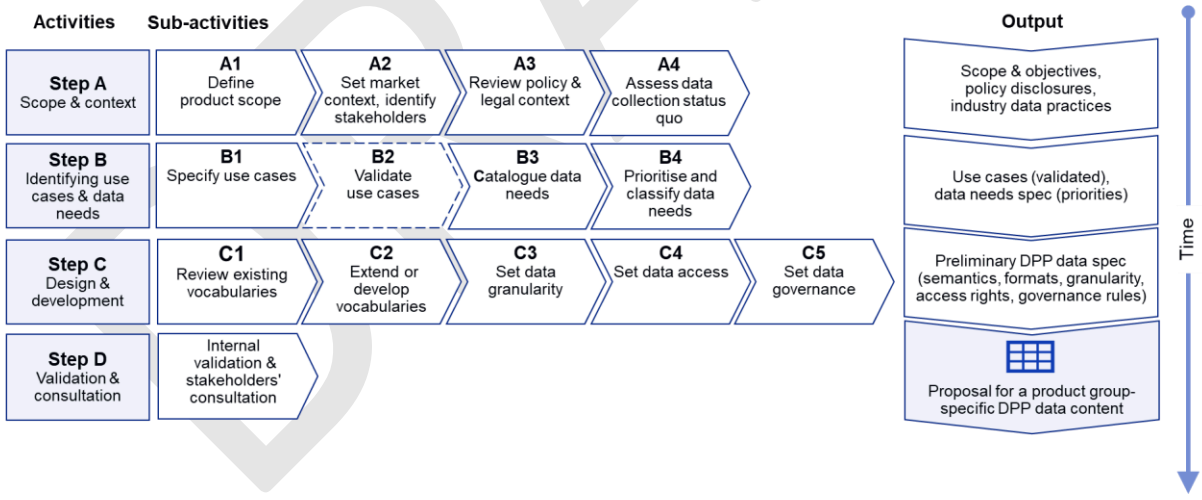
3.1. Step-by-step process

The goal of the methodology is twofold. First, it focuses on identifying data points required under the ESPR delegated acts, ensuring that all mandatory information for the DPP is systematically captured. Second, it aims to identify additional data points already collected by industry that may not be legally required but are nevertheless considered useful for improving transparency, operational efficiency, or sustainability performance. By combining regulatory and consumer/industry-relevant data needs, the methodology helps illustrate potential options for defining the scope of the DPP.

It is important to stress that the outputs of this method should be validated through stakeholder consultation and supported by an impact assessment evaluating expected overall benefits as well as the costs and administrative burden for economic operators.

The methodology applied in this study was developed as part of the ESPR methodological framework and provides the theoretical foundation for defining DPP content across product groups (Chawla et al., 2026). It follows a structured four-step approach (**Figure 1**) designed to ensure that the resulting specifications are policy-relevant, technically sound, and aligned with existing standards and regulatory requirements.

Figure 1. Methodology for setting DPP content under ESPR



Source: (Chawla et al., 2026)

The four steps are as follows:

- *Step A: Scope & context*
  This step involves defining the product group and contextual basis based on existing disclosure obligations and related systems and current industry practices in data collection, sharing, and verification. The outputs of this step are presented in sections 4 (scope) and 5 (policy and market-driven disclosures) in this report.

- *Step B: Identifying Data Needs*
  Step B translates the scope and context into use cases that -driven conceptual information requirements and organises these into a structured conceptual list of data points. The outputs of this step are presented in section 6.

- *Step C: Design & Development*
  This is the core ontological and technical phase. It translates conceptual data needs into a set of specific recommendations for the DPP content for the product group under analysis (section 7). This phase includes identifying appropriate vocabularies, performing a structured gap analysis against existing standards (section 8), and establishing rules for data granularity (section 9.1), access rights (section 9.2), and governance (section 9.3).

- *Step D: Validation & Iteration*
  The proposed DPP specification undergoes internal validation and, where appropriate, external expert feedback. This step ensures that the DPP design is fit for purpose, technically implementable, and aligned with stakeholder needs. While this report already integrates some input from selected actors along the value chain to describe the current data-related industry practices and refine the proposals for the DPP specifications, dedicated open stakeholder consultation should be performed as next step, to validate and adjust the recommendations in this report as relevant.

3.2. Stakeholder engagement

Semi-structured interviews were conducted with selected stakeholders representing different roles across the textile value chain to validate and enrich the information on current data collection, sharing and verification. This has served to propose DPP requirements taking into account the level of readiness considering industry practices.

The selected stakeholders described in Table 1 provide coverage across the textile value chain, including upstream material sourcing, manufacturing, branding, retail, standards-setting, and digital traceability services. The group also reflects a balance between EU and third-country actors, as well as between large organisations and small and medium-sized enterprises (SMEs), to ensure inputs from different geographic locations, and varying levels of digital maturity.

Table 1. Selected stakeholders interviewed

Organisation	Location	Role in value chain	Rationale for inclusion
GS1	Brussels, Belgium	Global product identification and standards body	Provides reference perspective on the most commonly used global identifier (GTIN, GLN) conventions
TrusTrace	Stockholm, Sweden	Traceability and compliance platform provider	Represents system-level feasibility, interoperability constraints, and current digital practices among customers, mainly large apparel brands
Avery Dennison	Mentor, United States	Identification, labelling, and digital traceability solution provider	Provides insight into physical–digital linkages (labels, QR/RFID) and item-level identification feasibility; active in multiple CIRPASS II textile DPP pilots
ECOM Agroindustrial Corp.	Pully, Switzerland	Upstream raw material supplier, global top-four cotton trader	Represents upstream raw material sourcing for conventional and organic cotton, providing perspectives on origin data availability, certification practices, and traceability practices beyond tier-1 manufacturing
Valérius Group	Braga, Portugal	Medium-sized vertically integrated apparel manufacturer with proprietary recycled fibre product	Represents EU-based manufacturing perspective and downstream recycling use case
Aditya Birla Fashion and Retail Ltd.	Mumbai, India	Conglomerate with domestic apparel retail and cellulose fibres exported to the EU	Represents both material production for the EU market and non-EU apparel product retail perspectives
ASKET	Stockholm, Sweden	Small apparel brand	Provides SME brand perspective with high traceability ambition and a small product portfolio
Zalando	Berlin, Germany	Online apparel retailer and marketplace	Represents downstream retail and marketplace perspective, including private label products and aggregation of third-party product data
Chalmers University of Technology (CIRPASS II)	Gothenburg, Sweden	Research and pilot implementation	Provides research-based and pilot-driven insight into DPP feasibility and experimental implementations

Source: own elaboration

The analysis focused on whether relevant data points identified are already collected in practice, whether they are collected in a sufficiently standardised and verifiable manner, and whether they can realistically be provided at a certain level of granularity. It also examined the extent to which

existing systems, standards, and verification mechanisms can support DPP implementation without creating disproportionate administrative burden, particularly for upstream actors.

More specifically, stakeholders were asked to review a list of preliminary DPP data points which had been identified through the assessment in the preparatory study [ref] and the definition of use cases (section 6). For each data point, they were requested to provide input orally and in written on a structured spreadsheet on:

- Current data availability in practice
- Standards or methodologies used
- Terminologies used
- Levels of granularity
- Traceability and verification
- Open comments

The main findings are presented in section 5.2, which outlines Market-driving industry practices and are integrated into the proposals in the sections 7, 8 and 9 regarding the Proposed DPP content, vocabularies and DPP system information (DSI) (i.e. granularity, access rights and data governance). Dedicated open stakeholder consultation should be performed as next step, to validate and adjust the recommendations in this report as relevant.

3.3. Limitations

While the methodology provides a structured and replicable process, several limitations remain:

A. Limited coverage of technical and IT implementation aspects

The methodology focuses primarily on identifying and structuring data needs, but it does not provide detailed guidance on IT architecture, data exchange protocols, cybersecurity, hosting models, or integration with existing industry systems.

B. Incomplete consideration of ongoing standardisation work

The methodology does not fully assess the implications of relevant standardisation initiatives (e.g. CEN/CENELEC, ISO, IEC) that may influence DPP data models, terminologies, and interoperability requirements.

C. Lack of guidance on selection of data carrier type and its placing

The methodology does not address how to choose the appropriate data carrier or where it should be placed on products or documentation.

D. Lack of cost assessment

The methodology does not assess the costs of the DPP implementation and data disclosure.

Thus, further consideration of these aspects is needed outside this report for the correct and complete definition of the DPP requirements in the corresponding delegated act.

4. Scope

The ESPR establishes a horizontal framework for digital product information requirements, but the scope of DPP obligations for the textiles sector will ultimately depend on how the Commission defines product groups in the forthcoming delegated acts.

4.1. Products included in the scope of the ESPR preparatory study

This study proposes a scope for the DPP obligations in alignment with the ESPR preparatory study, where a 'textile product' is defined as a product containing at least 80% textile fibres by weight[16].

Starting from the first ESPR Working Plan, which identified textiles among the product priorities to be regulated, the preparatory study proposed a reduced scope to ensure sufficient homogeneity to allow the development of common ecodesign requirements, tailoring them to product subgroups as appropriate.

The preparatory study identified **textile apparel** as the most suitable subgroup to be addressed because it:

- has potential improvements already investigated by the literature (Article 18(a) of the ESPR);
- has the largest share in the EU market (Article 18(b) of the ESPR); and
- produces the largest share of the environmental impacts, based on the available literature (Article 18(c) of the PEFCR).

Table 2 reports the types of textile apparel under scope and their description, also in line with the Product Environmental Footprint Category Rules for apparel and footwear (PEFCR A&F)[17].

Table 2. Product types of textile apparel included in the scope of the preparatory study

ID	Category	Description
01	T-shirts	Garment to cover the upper body to the elbow (e.g. singlets, vests, t-shirts, polo shirts, other short-sleeved shirts)
02	Shirts and blouses	Garment to cover the upper body including the entire arm (e.g. long-sleeved shirts, blouses, base layers)
03	Sweaters and mid-layers	Garment to keep the upper body warm and covered (e.g. pullovers, cardigans, hoodies, jerseys, sweatshirts, sweaters)
04	Jackets and coats	Garments to put on top of a shirt or sweater or to protect from the natural elements (e.g. blazers, suit jackets, overcoats, other light jackets, rain jackets, outdoor winter jackets, parkas, outdoor vests, anoraks)
05	Pants and shorts	Garment to cover the lower body, may protect from the elements (e.g. casual pants, outdoor pants, dress pants, jeans, sports pants, capri pants, shorts)
06	Dresses, skirts and jumpsuits	One-piece garment that covers both the upper and lower body, or the lower body only, other than pants and shorts (e.g. short- and long-sleeved, strapless, wrap, long and short, one-piece suits)

[16] Also in line with the Textile Labelling Regulation. Regulation (EU) No 1007/2011 of the European Parliament and of the Council of 27 September 2011 on textile fibre names and related labelling and marking of the fibre composition of textile products and repealing Council Directive 73/44/EEC and Directives 96/73/EC and 2008/121/EC of the European Parliament and of the Council. Available at this link.

[17] 'Product Environmental Footprint Category Rules (PEFCR): apparel and footwear', available at this link.

ID	Category	Description
07	Leggings, stockings, tights and socks	Tight garment to cover the legs and/or feet. (e.g. opaque and sheer tights, panty-hose, fishnets, ankle socks, knee socks, low-cut socks)
08	Underwear	Garment worn under clothes, often next to the skin of the upper or lower body (e.g. boxers, briefs, panties, bras, body-shaping suits)
09	Swimwear	Garment worn for water-based or sun-based activities (e.g. bikinis, bathing suits, racing-style swimwear, board shorts)
10	Textile apparel accessories	Hats – Garment to cover the head for warmth or as a fashion item (e.g. caps, flat caps, woollen hats/beanies, fedoras, panamas, bowlers, newsboys, berets); Scarves and ties – Garment worn around the neck for warmth or as a fashion item (e.g. warm and light scarves, buffs, neckerchiefs, headscarves, shawls, bowties); Belts – Flexible band or strap worn around the waist or over the shoulders used to secure or to hold up clothing such as pants (e.g. dress belts, casual belts, buckle belts, tie-up belts, suspenders); Gloves and mittens – Articles of clothing that protect hands and wrists from the elements or as a fashion item. Used in pairs (e.g. fingerless gloves, fashion gloves, outdoor sports gloves, mittens).

Source: ESPR textiles preparatory study.

Technical textile apparel, such as workwear and sportswear are included in the scope, as long as (1) it is textile apparel and (2) they do not belong to the list of excluded products defined in section 4.2.

4.2. Products excluded from the scope of the ESPR preparatory study

The following types of textile apparel are **excluded** from the scope of the ESPR preparatory study because they are very different to products included in terms of their function and physical characteristics:

- smart textiles[18], which are textiles able to sense and react to environmental conditions and external stimuli (e.g. mechanical, thermal, and chemical stimuli) thanks to a number of sensors incorporated in the textiles;
- electronic textiles or e-textiles[18], which are textile-based systems that exhibit an intended and exploitable response as a reaction either to changes in their surroundings/environment or to an external signal/input[19];
- textile apparel identified as personal protective equipment (PPE) in accordance with Regulation (EU) 2016/425[20];

[18] Definition of smart textiles is inspired by ISO/TR 23383:2020. Textiles and textile products — Smart (Intelligent) textiles — Definitions, categorisation, applications and standardization needs. Available at this link. Last accessed on 5 February 2024.

[19] Textile apparel containing batteries to produce lights and/or sounds are excluded from the scope of this preparatory study.

[20] Personal protective equipment (PPE) Regulation. REGULATION (EU) 2016/425 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC. Available at this link.

— textile apparel identified as medical devices or as an accessory for a medical device in accordance with Regulation (EU) 2017/745[21]; and

— textile apparel identified as toys in accordance with the Directive 2009/48/EC[22].

Aspects related to customised textile apparel and upcycled textile apparel[23] will be addressed in the impact assessment that will follow the preparatory study in the policy-making process.

4.3. Scope of the DPP

Within this context, the obligation to create and maintain a DPP will apply to **textile apparel products** placed on the EU market as described in sections 4.1 and 4.2.

All **intermediate products**, such as fabrics, yarns, fibres, are **excluded** from this scope. While the DPP could contain related data points, such as raw material sourcing, recycled content, or material composition, the obligation formally applies only to final products. Thus, it will not be possible to rely on the DPP as mandated under the textile apparel Delegated Act as a traceability tool understood as the means of transmitting information between actors upstream in the value chain (see Box 1). Other DPPs addressing intermediate textile products may be mandated under future separate acts or developed on a voluntary basis by the industry concerned.

It is important to note that, all products under scope would be able to use information carriers for the DPP based on technologies such as Ultra High Frequency (UHF), Radio-frequency identification (RFID) and Near-Field Communication (NFC), without being considered e-textiles and therefore excluded from the scope of application.

Box 1. Supply chain traceability and connectivity challenge

While the ESPR assigns the legal obligation to register and maintain a DPP only to the economic operator placing the final product on the EU market, the information required within the DPP often originates upstream, well before the point at which the obligation formally applies.

The data related to intermediate textile products (fabrics, yarns, fibres) will form the foundation of the information included in the final product's DPP (the apparel). As a result, economic operators placing the final product on the EU market—including manufacturers, importers and distributors— depend on the accuracy, continuity, and completeness of data provided by earlier stages in the supply chain.

This creates a structural challenge: DPP obligations are placed at specific points, yet the quality and completeness of DPP data rely on information coming from earlier steps, including e.g. raw material sourcing, recycled content, or material composition. Without mechanisms that support traceability and connectivity across organisations, downstream economic operators may struggle to meet their DPP

21 Medical devices Regulation. Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC. Available at this link.

22 Toy Safety Directive (TSD). Directive 2009/48/EC of the European Parliament and of the Council of 18 June 2009 on the safety of toys. Available at this link.

23 'Upcycled textiles' meant here as textile products manufactured by making use of used and/or waste components of other textile products

obligations despite having exercised reasonable due-diligence in obtaining information from their supply chain.

This is exacerbated because of the complexity of the apparel supply chain, which is exceptionally long, opaque and geographically dispersed with numerous tiers (UNECE and UNTRADE, 2020; Cai and Choi, 2020; Brondino, 2022). The production of an item of textile apparel involves at least 15 economic operators via the production of raw materials, manufacturing and retailing operations. According to the current normal practices, most of the companies in the value chain can get information from their immediate suppliers, but usually information is lost about suppliers further upstream (UNECE and UNTRADE, 2020). This therefore hinders the role of responsible economic operators in obtaining and verifying information.

It is essential to ensure a coherent and consistent flow of complete, accurate, verified and transferable data along the entire textiles value chain. This requires harmonised and interoperable data exchange systems capable of preserving chain of custody information as materials and products move between actors in the supply chain.

Although the ESPR does not regulate data sharing across the entire supply chain, the DPP offers a semantic and technical foundation that supply chain actors may voluntarily adopt to enable smoother information flows. Such alignment will be crucial to ensure that the data needed to populate the DPP remains accurate, consistent, verifiable, and transferable across the entire textiles value chain.

5. Existing EU disclosure Obligations and market-driving industry practices

5.1. Required under legislation

Beyond the ESPR — which establishes the mandatory, cross-cutting requirements for all DPPs and described in section 2.1.2— other regulatory frameworks impose reporting duties for textile apparel products. This section presents the legislation that defines disclosure obligations pertinent to the potential content of the DPP. While this does not aim to be an exhaustive review of all legislation on the textiles sector (covered in section 4 of the preparatory study (Delre, A. et al., 2025)), the following data points have been identified as relevant.

Under the Textile Labelling Regulation (TLR)[24]:

- **Fibre composition:** mandatory disclosure of fibre names and weight percentages in descending order (e.g. '98% Cotton, 2% Elastane') (TLR Article 9).
- **Non-textile parts of animal origin:** the phrase 'Contains non-textile parts of animal origin' is mandatory if applicable (TLR Article 12).
- **Composition of non-textile parts:** mandatory disclosure of composition of all non-textile parts (both of animal origin such as leather and fur and of non-animal origin such as rubber or

[24] Textile Labelling Regulation. Regulation (EU) No 1007/2011 of the European Parliament and of the Council of 27 September 2011 on textile fibre names and related labelling and marking of the fibre composition of textile products and repealing Council Directive 73/44/EEC and Directives 96/73/EC and 2008/121/EC of the European Parliament and of the Council. Available at this link.

plastics in non-textile fibre form) is under consideration for the revision of the Regulation (basic mandatory information on the physical label, supplementary voluntary information on the digital label, hosted on the DPP).

— **Care instructions:** under consideration for the revision of the Regulation (basic mandatory information on the physical label, supplementary voluntary information on the digital label, hosted on the DPP).

— **Origin:** meaning the place of making-up (last place of manufacturing), under consideration for the revision of the Regulation (basic mandatory information on the physical label, supplementary voluntary information on the digital label, hosted on the DPP).

— **Size:** under consideration for the revision of the Regulation (basic mandatory information on the physical label, supplementary voluntary information on the digital label, hosted on the DPP).

Under the Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)[25]:

— **Substance of very high concern (SVHC):** presence of SVHCs above 0.1% weight by weight (w/w) needs to be communicated to the recipients of those articles (REACH Article 33). However, ESPR is far broader in this respect, setting the obligation to set information requirements and, subject to certain thresholds and exceptions, disclose data on the DPP on substances of concern (SoCs) present in the product, including these (ESPR Article 7(5)). The additional data points related to this topic that derive from the ESPR are further described in section 3.

Under the Empowering Consumers Directive, amending the Consumer Rights Directive 2011/83/EU[26]:

For all consumer products, including textile apparel products:

— **Legal Guarantee of Conformity:** traders must provide a reminder of the existence and main elements of the legal guarantee, including its minimum two-year duration, using a harmonised notice (Article 5(1)(e)).

— **Commercial Durability Guarantee:** if a producer offers a free commercial guarantee of durability for the entire good for more than the 2-year legal minimum and makes this information available, the trader must disclose it using a harmonised label (Article 5(1)(ea)).

— **Conditions of after-sales services and commercial guarantees**: where applicable (Article 5(1)(ec)).

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25 REACH Regulation. Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC. Available at this link.

26 Directive (EU) 2024/825 of the European Parliament and of the Council of 28 February 2024 amending Directives 2005/29/EC and 2011/83/EU as regards empowering consumers for the green transition through better protection against unfair practices and through better information. Available at this link

Under the Corporate Sustainability Reporting Directive (CSRD)[27]:

Undertakings with a net turnover exceeding EUR 450 million and an average of more than 1 000 employees[28] must perform a materiality assessment to identify which impacts, risks, and opportunities are material to its specific business model and value chain. Regardless of their sector of operation, they will be subject to some disclosure obligations based on the results of the materiality assessment:

- **Gross Scopes 1, 2, and 3 GHG emissions in metric tonnes of CO2eq.:** it is mandatory for all undertakings in scope, provided they assess climate change as a material topic[29] (Disclosure Requirement E1-6 under European Sustainability Reporting Standard (ESRS) E1 – climate change). There is a temporary exemption for companies with fewer than 750 employees, which may omit Scope 3 during the first year.
- **Total weight of products and materials** used, as well as the **weight and percentage of secondary (recycled) components and materials** used in manufacturing: it is mandatory for all undertakings in scope, provided resource inflows are assessed as a material matter (Disclosure Requirement E5-4 under ESRS E5 - Resource use and circular economy).

However, these disclosures are intended at company-level rather than at product-level, being thus of limited interest for consideration in the DPP.

Under the Corporate Sustainability Due Diligence Directive (CS3D)[30]:

- **Due Diligence Statement**: the directive will require large companies[31] to make a public statement describing the due diligence processes, the actual or potential adverse impacts and actions taken to address them. While the statements must be submitted to the European Single Access Point (ESAP)[32] in a data-extractable or machine-readable format, this disclosure is of limited interest for consideration in the DPP (despite in principle being compatible) as it is intended for company-level rather than product-level, and the directive already mandates it to be communicated via company websites.

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27 Corporate Sustainability Reporting Directive (CSRD). Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting. Available at this link. Amending directive at this link

28 Regarding third-country undertakings, the requirements will apply only to companies with a net turnover above €450 million for the parent undertaking within the EU and above €200 million generated turnover for the subsidiary or branch. Moreover, some transition exemption exist.

29 'material', in the context of the Directive 2013/34/EU, means the status of information where its omission or misstatement could reasonably be expected to influence decisions that users make on the basis of the financial statements of the undertaking. The materiality of individual items shall be assessed in the context of other similar items.

30 Corporate Sustainability Due Diligence Directive (CSDDD). Directive (EU) 2024/1760 of the European Parliament and of the Council of 13 June 2024 on corporate sustainability due diligence and amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859. Available at this link.

31 Companies with more than 5,000 employees and above €1.5 billion net turnover. CSRD-compliant companies are exempt as they fulfil this obligation by describing their due diligence process within their existing sustainability report.

32 The European Single Access Point (ESAP) is a centralized digital platform established by Regulation (EU) 2023/2859 to provide public access to information relevant to financial services, capital markets, and sustainability

Under the EU Ecolabel[33] (voluntary):

— **EU Ecolabel:** it is a voluntary certification scheme to recognise products that demonstrate a reduced environmental impact throughout their entire life cycle. To carry the label, products must meet a comprehensive set of ecological criteria, including specific fibre sourcing (such as organic or Integrated Pest Management cotton), energy-efficient manufacturing, the restriction of hazardous substances through a strictly defined Restricted Substance List (RSL), and "fitness for use" metrics like dimensional stability and colour fastness.

Under national and third country legislation:

In addition to what applies in terms of EU legislation, this section identifies data disclosures required under national law, also exploring the obligations in third (non-EU) countries, on a non-exhaustive basis.

In France, disclosure requirements for textile apparel are primarily governed by the Law n° 2020-105 - the AGEC Law[34]. It stablishes the **Eco-score** as an environmental labelling tool that provides consumers with immediate insight into the environmental impacts of apparel based on specific product characteristics such as weight and fibre composition. The score includes 16 environmental indicators plus a specific durability/repair coefficient. It is voluntary since October 1, 2025, mandatory if environmental claims are made, and third parties will be permitted to calculate and publish these scores for brands that do not do so themselves from October 1, 2026.

Moreover, Article L541-9-3 mandates the use of the **Triman logo** accompanied by specific sorting instructions to inform consumers how to properly dispose of the product at its end-of-life since January 1, 2022.

Sorting and disposal instructions of all consumer goods, are also required in Finland, including apparel textiles

Regarding other requirements related to the obligations in the TLR or its potential revision, several countries already require similar information:

— United States, Canada, Japan, China, United Kingdom and Turkey require **fibre composition**

— 6 Member States (Belgium, Estonia, France, Italy, Portugal, Spain) require **leather and/or fur content labelling**.

— United States, Canada, Japan, China, United Kingdom, Switzerland and Turkey **require non-textile content**.

— Spain and Lithuania require **origin** information from 3rd countries, whereas France requires supply chain information for all clothing. Outside the EU, origin is also required in Canada, China and United States.

[33] 2014/350/EU: Commission Decision of 5 June 2014 establishing the ecological criteria for the award of the EU Ecolabel for textile products. Available at this link.

[34] Eco-Score. Available at this link.

— Countries like China, Japan, Canada, Australia and the USA mandate **care instructions** via national symbols/standards, which are also mandatory in 12 Member States[35] (GINETEX, 2017).

— Estonia, Slovakia and China require product **size** information.

— Ireland requires **flammability** information on children's nightwear.

Table 3 below gathers all the data points presented in this section.

Table 3. Disclosures related to textiles in legislation other than ESPR

Data Point / Disclosure	Legislation / Regulatory Framework	Level of Disclosure	Status
Fibre Composition (Names and %)	TLR	Product	Mandatory
"Contains non-textile parts of animal origin"	TLR	Product	Mandatory
Composition of non-textile parts	TLR	Product	Under consideration for revision
Care Instructions	TLR	Product	Under consideration for revision
Origin	TLR	Product	Under consideration for revision
Size	TLR	Product	Under consideration for revision
SVHC Presence (>0.1% w/w)	REACH	Product	Mandatory
Commercial durability guarantee label (if longer than 2 years)	Consumer Rights Directive, as amended by the Empowering Consumers Directive	Product	Mandatory
Commercial durability guarantee notice and Conditions of after-sales services and commercial guarantees	Consumer Rights Directive, as amended by the Empowering Consumers Directive	Product/Company	Mandatory
Gross Scopes 1, 2, 3 GHG Emissions	CSRD (ESRS E1-6)	Company	Mandatory if topic is material
Recycled Content (Weight/%)	CSRD (ESRS E5-4)	Company	Mandatory if topic is material
Due Diligence Statement	CSDDD	Company	Mandatory
EU Ecolabel	EU Ecolabel	Product	Voluntary
Eco-score	AGEC Law (France)	Product	Voluntary and mandatory for claims
Sorting & Disposal Instructions	AGEC Law (France – Triman logo) Finland	Product	Mandatory
Care Instructions	National Standards (China, Japan, Canada, Australia,	Product	Mandatory

[35] Austria, Bulgaria, Estonia, Finland, Hungary, Lithuania, Romania, Slovakia, Czech Republic, Poland, Denmark, Letonia and, as well as, in the EEA, Norway.

	United States, 12 EU Member States)		
Fiber composition	United States, Canada, Japan, China, United Kingdom and Turkey	Product	Mandatory
Product size	Estonia; Slovakia	Product	Mandatory
	China	Product	Mandatory
Origin	Spain, Lithuania, France, China, Canada, United States	Product	Mandatory (in Spain and Lithuania only for 3rd country products)
Flammability	Ireland	Product	Mandatory
Leather and/or Fur content	Belgium, Estonia, France, Italy, Portugal, Spain	Product	Mandatory
Non-textile content	Japan, China, United Kingdom, Switzerland, Turkey, Canada, United States	Product	Mandatory

Source: own elaboration

5.2. Market-driving industry practices

Regarding market-driven practices, there are voluntary reporting activities implemented by actors in the value chain to meet the information needs and technical requirements of their clients. This information may be relevant for inclusion in the DPP as their integration could support industry needs, improve data availability across the value chain, and enhance the overall utility of the DPP. This analysis also allows the assessment of the readiness level of the industry for the implementation of the DPP for the disclosure of specific data points.

5.2.1. Information availability across the value chain

The textile value chain is currently defined by a profound asymmetry in information availability, which diminishes significantly as one moves from downstream retailers to upstream material producers. Moreover, 80% of garments circulating in the EU are imported[36], increasing the difficulty in tracking data across international borders and multiple tiers of sub-suppliers.

While brands and manufacturers maintain high visibility over Tier 1 assembly suppliers via established Enterprise Resource Planning (ERP) systems, the 'full story' of Tier 2 (fabric), Tier 3 (yarn), and raw material origin remains largely opaque. Suppliers upstream possess technical data on fibre properties and chemical usage but frequently manage this information in unstructured formats and as Confidential Business Information (CBI), as they may allow other entities to understand their cost structure and exert pressure on them in price negotiations.

Currently, industry practices differ depending on the data type, distinguishing between:

[36] The figure refers to the number of items. Source: Reach4textiles project https://euratex.eu/reach4textiles/

— Commercial Data: Information related to orders, shipping, and transactions, which is highly standardized and digitised within ERP and Electronic Data Interchange (EDI) systems.

— Sustainability Claims and Technical Data: This includes fibre and garment properties, chemical usage, and certifications. It is managed ad hoc through manual processes, email chains, and standalone unstructured documents like PDF test reports or Excel spreadsheets.

After a product is placed on the market, consumers may access information through physical labels and marketing claims. At the end-of-life, recyclers and sorters may rely on the information in physical labels to identify the garment composition, and sort and pre-treat accordingly, when they are not removed or faded.

The analysis identifies a **high level of readiness** for the industry to disclose data points that are already central to commercial operations and regulatory compliance. Product identification, producer information, transaction data, and fibre composition are consistently collected across the textile sector and are generally available at model or order level. While no single harmonised framework exists across the global textile sector, there is strong alignment on commercially critical logistics-related identifiers and classification standards.

On the one hand, Global Standards One (GS1) identifiers, notably the Global Trade Item Number (GTIN) for product identification and the Global Location Number (GLN) for operators and facilities, are the most consistently cited reference standards across stakeholder groups. GS1 has clarified that GTIN is typically generated on a model-level and can be expanded to include lot and serial numbers to arrive at batch- and item-level identifiers. Furthermore, while GTIN and GLN are identifier codes, names, addresses, and contact details are recorded as free text according to GS1 standards. Still, less mature brands tend to use internal Stock Keeping Unit (SKU) numbers rather than globally unique identifiers to reference products.

On the other hand, trade classification systems, including the Harmonised System (HS) and the Integrated Tariff of the European Union (TARIC), are well established for customs and regulatory purposes. Stakeholders, however, stressed that these codes should be implemented in a manner that does not suggest that DPP obligations apply to imports only, since textile manufacturing also takes place inside the European Union.

Other data categories show **partial readiness** and greater variability in practice. Product robustness are quality attributes typically generated through third-party testing and are available in the form of test reports or certificates. However, these data are rarely stored or exchanged as structured, machine-readable datasets and are instead handled as separate documents (e.g. PDF test reports). These are not meant to be shared with consumers but are normally performed to internally ensure that the garment meets with the standards aimed by the manufacturer.

The International Organization for Standardization (ISO) standards are widely used for robustness testing. However, the tests performed vary depending on the relevance of certain robustness parameters by product type, and different acceptance levels are set based on the requirement aimed by the manufacturer. Consequently, only the tests that are pertinent to a given apparel category are carried out. Interviewees noted that if the regulatory framework were to make a fixed set of tests mandatory for all apparel categories, the number of tests required would increase relative to current practice. This broader testing regime would affect models that are not currently subjected to those particular tests, thereby raising the overall testing workload and associated costs without delivering a proportionate regulatory or consumer benefit.

There is less recognition of sustainability claims and chemical standards, with current practices for the disclosure of related data points relying on a voluntary patchwork of certifications. However, their uptake remains limited due to the costs associated to third-party certifications.

Regarding information on substances, many retailers and other operators placing textile apparel on the market have implemented chemical management strategies to enable compliance and to meet their due-diligence obligations in this regard. These normally rely on supply chain information. In this sense retailers rely on declarations by suppliers, binding contractual terms and third-party certification to support compliance claims related to the absence of regulated / controlled substances. OEKO-TEX Standard 100[37] is cited by stakeholders as the most prevalent mechanism for chemical verification across the sector. It provides trusted verification against regulatory thresholds but operate on a binary pass/fail basis. Stakeholders consistently indicated that substance-level concentration and location data are not reported, and noted that such information is unavailable in a form that could be disclosed reliably and proportionately.

As for data on recycled and organic content, it is commonly collected through third-party certification schemes that rely on Chain of Custody models and are generally available at model or batch level. Among the most common ones, the Global Organic Textile Standard (GOTS), the Better Cotton Initiative (BCI), the Global Recycled Standard (GRS), and the Recycled Claim Standard (RCS) stand out. However, they operate with different scopes, vocabularies, and data access models, resulting in limited interoperability across systems and platforms. In addition, while the presence and percentage of recycled content is often certified, stakeholders indicated that more granular data regarding the origin of recycled materials (i.e. the type of waste from which it originates) is not provided consistently across supply chains.

Environmental footprint data is produced only by a subset of voluntary actors and is typically calculated at model level using external service providers. Traceability system providers concur with using the Product Environmental Footprint Category Rules (PEFCR) for Apparel and Footwear and rely on a mix of primary and secondary datasets. Stakeholders consistently noted that batch-level environmental footprint calculations are not practicable under current data availability from suppliers and cost constraints. Model-level reporting, relying on averages and data available, was seen as the only scalable and proportionate solution, enabling comparability between products while allowing the use of benchmark datasets.

Finally, there is a broad offer of Type I Ecolabels aligned with ISO 14024 (EU Ecolabel, Blue Angel, Nordic Swan) which use multi-criteria third-party verified standards. However, the Ecolabel Index[38] identifies up to 297 environmental labels globally (including Type I but also Type II - Self-declared Environmental Claims), leading to significant consumer confusion. Despite this proliferation, 82% of consumers still believe that available information on environmental impacts is insufficient.

Overall, the analysis indicates that although many data points are already collected and shared in practice, their availability, structure, and granularity vary significantly across data categories and actors. Building on these existing good practices and on proactive data-collection systems will therefore be challenging, as it requires the harmonisation of formats, definitions and reporting frequencies while minimising disruption to existing workflows.

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37 https://www.oeko-tex.com/importedmedia/downloadfiles/OEKO-TEX_STANDARD_100_Standard_EN_DE.pdf

38 Ecolabel Index. Website available at this link. Last accessed on 12 January 2024.

5.2.2. Data formats and digitalisation

The DPP-relevant information presented above is typically stored in fragmented and heterogeneous formats, which evidences the lack of harmonised digital data management practices throughout the textile value chain. Structured, machine readable datasets continue to be the exception rather than the rule.

Information essential for commercial activities—product identifiers, basic descriptions and transaction records—is usually kept in Enterprise Resource Planning (ERP) systems or comparable internal tools. Conversely, numerous other DPP related data are handled ad hoc and kept chiefly in document based formats such as PDF files, spreadsheets, or static reports and exchanged via email or proprietary systems.

Beyond ERPs, major manufacturers typically run several internal solutions—Enterprise Risk Management (ERM) tools, Quality, Health, Safety and Environment (QHSE) systems and procurement platforms. Nevertheless, interviewees note that DPP-related information is often scattered across these applications without full integration. Voluntary sustainability data are especially prone to being stored outside core operational systems, which hampers their accessibility and reuse. Moreover, the lack of API-based data exchange means that PDF certificates are rarely verified in real-time, creating a high administrative burden as suppliers must repeatedly manually upload documents to different brand portals; this could be alleviated if the DPP were used as a single, shared portal.

Micro-enterprises and SMEs, accounting for more than 99 % of all companies operating in the EU textile supply chain, generally lack the digital infrastructure to provide the structured, machine-readable data required for future DPP. Consequently, they depend largely on manual and document-based procedures. Respondents repeatedly stressed that gathering information from beyond tier-1 suppliers is a highly manual activity. Data from sub-suppliers (e.g., fabric mills, dye houses, fibre producers) are typically collected via email threads, requiring repeated follow-ups, ad hoc requests and manual collation. This approach is time- and resource-intensive and often yields inconsistent formats and incomplete data sets. Manufacturers consequently shoulder a high burden, having to satisfy diverse data requests from customers while coordinating with many upstream partners.

Interviewees agreed that the variation in traceability adoption between the EU and third-country markets is driven less by geography than by organisational size and customer expectations. This distinction is illustrated by contrasting practices observed among the interviewees: One European textile consortium frequently collaborates with Portuguese sub-suppliers, many of which are artisanal or micro-enterprises that possess only minimal digital capabilities. In contrast, a major Asian fibre producer that exports extensively to Europe has run a blockchain-based traceability platform since 2019, allowing forest-to-fibre tracking of its cellulosic fibres across several production sites. Overall, the findings indicate that the key challenge for DPP implementation is not the availability of data, but the absence of standardised formats, interoperable systems and scalable digital workflows, especially for SMEs and for data that originates upstream of tier-1 suppliers.

To address format fragmentation and limited interoperability, traceability platforms and service providers are progressively working to close these gaps. Such solutions typically gather data in the formats, systems and standards preferred by their clients, storing them in data-lake repositories and linking certificates to specific products or batches. By converting fragmented inputs into a unified internal structure, they can generate structured reports. Nevertheless, while these tools help

downstream users by consolidating information, they do not remove the fundamental manual effort required from suppliers nor do they curb the repeated data-request cycles across different platforms.

5.2.3. Granularity

Interviewees across the value chain emphasised that current data practices are characterised by low granularity as they have developed primarily to meet commercial, compliance and operational requirements, not the detailed traceability envisioned in certain DPP scenarios.

Most actors currently manage product data at model level for external communication —i.e. the information that is communicated to downstream partners, consumers and compliance platforms— mirrors the way product details are usually aggregated, validated and disseminated downstream. Model-level data aligns with existing commercial practices and is already employed for many disclosures, including fibre composition. Nevertheless, there are certain discrepancies concerning how the industry defines a model, with some distinguishing products based on varying colours and sizes.

Within apparel brand and Product Lifecycle Management (PLM) processes, a model (or style) usually represents a garment design that covers several colourways and sizes, all built on the same pattern and construction. Individual colour-size variations are recorded under separate SKUs below it. Under the GS1 standard, however, every distinct colour-size combination must have its own GTIN, so each variant is treated as a separate product at the identifier level. This creates practical implications for specific data points, especially for attributes like product weight that can differ across sizes of the same style.

The batch-level is also widely used across the textile value chain, mainly on internal operational practices. Respondents concurred that reporting at batch level is both feasible and suitable for many DPP data elements, as long as the requirements match current practices, mainly transaction, production, quality testing, certification, and traceability data. In particular, tests related to the product robustness are often performed by the manufacturers to ensure compliance with quality attributes as designed. These are conducted at the batch level as a control measure to identify manufacturing errors, enabling prompt recall in the event of non-compliance. Moreover, third-party certifications such as Content Claim Standard (CCS) also work at batch-levels.

However, once again, there are inconsistencies in batch definitions, being interpreted as a commercial order, a production run, or an upstream material lot. Some participants agreed that a batch ought to be described as a set of finished goods produced under essentially identical conditions, within a defined production period, using the same materials and processes, and traceable via a single suite of production, quality and compliance records. Otherwise, a single batch may mix multiple colours, sizes, and even upstream material lots, complicating the precise reporting of parameters like carbon footprints or chemical concentrations.

Paradoxically, a higher granularity level for environmental footprint reporting was challenged during the stakeholders' interviews. Environmental footprint assessments were described as resource-intensive and costly due to the primary data required from the full value chain. The stakeholders highlighted well-defined model-level Product Environmental Footprints (PEFs) or Life Cycle Assessments (LCAs) filling data gaps with agreed default values may be sufficient to meet main comparability needs. From a practical perspective, batch-level environmental-footprint reporting was deemed necessary only where notable and systematic batch-to-batch differences are anticipated—e.g., variations in materials, processes or sourcing locations. Where such differences do

not exist, batch-level calculations were judged disproportionate and unlikely to add value to decision-making or enforcement.

Regarding item-level, which is currently uncommon in industry practices for other than commercially critical logistics-related identifiers, interviewees generally considered it to be relevant for downstream applications and achievable over time through a phased implementation, but not as an immediate baseline requirement. Stakeholders suggested that item-level DPP data could be managed via an inheritance model, assigning each item a DPP derived from batch-level inputs and supplemented with a unique serial number. This approach would reduce the effort needed for data creation while allowing post-sale updates when item-specific events occur (e.g., repair, recycling). A labelling solutions provider added that physical and operational constraints around unique item labelling are significant, as current production often uses shared labels for identical products; moving to item-level identifiers would therefore demand substantial upgrades to suppliers' labelling processes.

5.2.4. Structural Barriers to Data Sharing

The transition towards a transparent data sharing landscape is hindered by significant economic and technical barriers:

- Confidential Business Information: Brands fear that sharing detailed supplier names or fibre-blend formulas will allow competitors to infer cost structures and negotiate better prices, potentially undermining their competitive advantage.
- Economic burden on SMEs: Implementation costs fall disproportionately on upstream actors many of whom are SMEs, who generate the data but often lack the financial incentives or digital maturity to maintain traceability platforms. Without explicit support measures, this could unintentionally reinforce existing asymmetries in the sector.
- Technical Interoperability: Although there is conceptual alignment, operational interpretations vary significantly. A major obstacle is the fragmentation of formats and the variance in specific terminology and scope outlined in voluntary schemes, which are widely practised in sustainability-related data disclosures.
- Limits to Scalability: Despite the relevance of item-level granularity, the industry supports a phased implementation to manage costs effectively.

All these and the previous learnings from the current industry practices regarding data collection and sharing are taken into account for the proposals presented in the sections 7, 8 and 9 after being contrasted with the use cases defined in section 6.

6. Use cases & data needs elicitation

Use cases[39] describe how different actors interact with a product or dataset in order to achieve specific objectives. They are a foundational element of the methodology to define the DPP content as they help to clarify why particular information is needed, who needs it, and for what purpose.

[39] In line with work carried out under JTC24, DPP Use Cases, CEN/CLC/JTC 24/WG 1 N 46, a use case is understood as a sequence of actions or events that describes how an actor interacts with a system to achieve a specific goal.

Each use case therefore includes, at a minimum, the identification of the primary and any secondary actors involved, a description of the scenario in which the use case takes place (including the current situation and the data gaps it presents), the goal to be achieved, the trigger that initiates the use case, and a step-by-step description of the actions required to reach the intended outcome. For each action, the information needed from the DPP is identified at a conceptual level.

For the textiles sector, use cases provide an essential link between regulatory objectives, market practices, and the operational realities of producers, downstream manufacturers, recyclers, authorities and other stakeholders. They allow the study to identify and prioritise the types of information that must be included in the DPP, taking into account both cross-cutting regulatory requirements and sector-specific needs. This, in turn, enables the elicitation and prioritisation of data needs according to their importance for the intended uses of the DPP.

By framing information needs from the perspective of real users across the value chain, use cases ensure that the definition of DPP content is grounded in practical functionality rather than abstract data requirements. However, they are still subject to refining based on the environmental and economic assessment of the design options related to the conceptual data points and other analyses in the preparatory study.

6.1. Identification of use cases

This section summarises the use cases identified for the different actors interacting with the DPP for textile apparel products. The complete use-case descriptions—including primary and secondary actors, triggers, detailed action flows, data requirements and update events—are provided in Annex 1.

6.1.1. Compliance check and monitoring of market

For public authorities, the DPP provides an essential tool to support regulatory enforcement, customs controls, market surveillance and sustainability-related public procurement. The following use cases describe how authorities interact with the DPP system:

A. Automated completeness verification of DPP disclosures (UC1)

Before a DPP can be finalised and made available in the EU Registry, an automated system validation checks whether all mandatory data fields—defined in the relevant delegated act—are present and correctly formatted. This ensures that incomplete or structurally non-compliant DPPs do not enter the registry. (Note: This verification assesses completeness and formatting but does not validate the factual accuracy of the data.)

B. Customs controls for imported products (UC2)

At the point of entry into the EU, customs authorities can electronically search the DPP Registry to verify that a product has been registered in the DPP registry, as required under Article 15 of the ESPR. Using product identifiers or the DPP data carrier, customs officers can cross-check shipment information against registry records.

C. Ongoing compliance monitoring by Market Surveillance Authorities (UC3)

Market Surveillance Authorities (MSAs) use the EU DPP Portal and Registry to access product information, including conformity documentation and sustainability-related disclosures. MSAs can use the EU DPP Web Portal and Registry to retrieve DPP data for products and assess alignment

with legal and technical standards. The DPP supports both proactive and reactive surveillance activities, enabling MSAs to efficiently monitor compliance with ESPR requirements and restrict the circulation of non-compliant products.

D. Statistical monitoring of apparel imports and production (UC4)

Authorities involved in market oversight require harmonised data for statistical reporting on imports, production volumes and market patterns. The DPP registry facilitates this by providing structured, machine-readable information that can be aggregated across product groups, reducing administrative burden and improving quality and timeliness of official statistics.

E. Statistical monitoring for the identification of fast fashion models (UC5)

Building on the previous UC regarding the analysis of market patterns, DPP data could be fed into dedicated statistical databases to generate metrics for detecting (ultra-)fast-fashion practices. For example, the count different model identifiers by the same economic operator may signal a strategy of constantly launching new items to stimulate frequent purchases – a hallmark of fast-fashion business models. Moreover, the combination of model identifier, economic operator identifier and manufacturing date can be used at end-of-life to link a specific manufacturer with the realised lifetime of its garments, what could serve to identify actors that design low quality products that would be quickly discarded and replaced. The data points that would derive from this use case need to be properly defined once the metrics are defined so that the relevant data for their calculation can be identified. They are thus not further described in the subsequent sections.

F. Public procurement sustainability verification (UC6)

Contracting authorities may consult DPPs submitted as part of tender procedures to verify compliance with relevant Green Public Procurement (GPP) criteria. The DPP provides reliable, standardised information on sustainability performance, material composition and environmental attributes, supporting transparent and evidence-based procurement decisions.

6.1.2. Business-to-consumers (B2C) data exchange

A. Inform purchasing for more sustainable consumer purchase decisions (UC7)

At the point of sale, the DPP can offer instant access to comprehensive product data, including information on durability, recycled content, recyclability, and environmental impact. This accessibility empowers consumers to make more informed and sustainable purchasing decisions. This applies for both first- and second-hand markets, being in the latter a valuable resource also for enhancing the trust in pre-owned garments, so promoting their reuse.

Yet, it needs to be noted that the main criteria applied by people when buying textile apparel are price and the perceived quality, the latter being highly subjective (European Commission. Directorate General for Environment., 2023). Sustainability principles rank lower in importance (Consumers, Health, Agriculture and Food Executive Agency. et al., 2018; AK Wienn and Greenpeace, 2023) and only around one third of the consumers tried to purchase clothes that are designed for durability (Fashion Revolution, 2020).

Adding some figures, according to a survey involving 11 483 respondents from ten European countries, consumers would prioritize price (68%), perceived quality (61%) and fit when they buy new clothes (56%). Other aspects considered while to a lesser extent include product longevity

(30%), the type of fibre (organic, synthetic, upcycled) (24%) and environmental impact of the apparel item (15%) (YouGov, 2021).

Thus, the benefits of providing information on durability, recycled content, recyclability, and environmental impact at the point of sale, while relevant, would be limited by consumers priorities while purchasing.

B. Maintaining apparel appropriately (UC8)

The DPP serves as a permanent, accessible source for detailed care instructions, helping consumers prolong the life of their garments. While the physical care label is already required under the Textiles Labelling Regulation, it can be removed or become unreadable after use and wash. Thus, the DPP provides a means to ensure that the information remains available, being relevant for both first-hand use and for second-hand purchases.

C. Self-repair of worn apparel (UC9)

For consumers wishing to perform their own repairs, the DPP could provide repair instructions, making the process more accessible and effective. Moreover, including component specifications would allow for exact replacements of elements such as buttons and zippers allowing to preserve the aesthetics. Nevertheless, when assessing the relevance of this use case, attention should be paid to the output of the analysis of the users' behaviour which did not highlight lack of information among the main barriers to repair versus discard or replacement decisions. Thus, requiring the data points needed in this use case as a mandatory field could be disproportionate due to the additional burdens to manufacturers to disclose it.

D. Finding repair services (UC10)

Easily finding available repair services could promote repairing over discarding and replacing of apparel. Informing about independent repair services in the DPP is deemed unsuitable, as these are generally local, small businesses, making it impractical for brands to identify relevant location-specific details without knowing where the garment will be used. Instead, information requirements could rather focus on repair services directly offered by the brand (if any), including their details and contact information for their easy identification and location. Given that this requirement would only apply when the service is provided by the retailer, minimal effort and burden on manufacturers would be ensured while still offering a benefit to the citizen.

6.1.3. Business-to-business (B2B) data exchange

The DPP supports traceability by enabling downstream actors in the value chain access verified information for its further integration in subsequent stages. As the obligation to create a DPP applies only to the final apparel when released into the market, traceability prior to this point is not possible. Nonetheless, it serves as a valuable resource for second-hand market resellers and professionals engaged in circularity practices such as repair, as described below. The following use cases describe typical interactions between manufacturers and downstream B2B consumers (see also Annex 1).

A. B2B data exchange for second-hand market resale (UC11)

As part of the expanding market for second-hand apparel, manufacturers may bolster the efforts of second-hand sellers by providing detailed and verifiable data regarding product authenticity, characteristics and material composition. These sellers often encounter difficulties due to limited

access to comprehensive product information, which can undermine market trust and hinder sales. The aim is to streamline resale transactions by allowing resellers access to extensive product data shared by the manufacturer through the DPP. Then, this information would be shared with second-hand consumers, enhances transparency and trust. This use case thus underpins the reliability and expansion of the second-hand market by connecting manufacturers and resellers that could use information to promote reuse as a sustainable consumer practice.

B. B2B data exchange to facilitate repair actions (UC12)

Repair service providers frequently face obstacles when trying to source identical components, such as specific buttons or zips, that are essential for matching the original design of garments. Although standard components are readily available, exact matches are vital for preserving the aesthetic integrity in the fashion industry. The objective is to empower repair providers to efficiently source and replace these specific components, ensuring repairs that uphold the garment's original aesthetics. By enabling the exchange of detailed component-specific data between manufacturers and repair service providers, the DPP may facilitate effective and visually harmonious repairs, thereby extending the lifecycle of apparel in the fashion industry. Nevertheless, when assessing the relevance of this use case, attention should be paid to the output of the analysis of the users' behaviour which highlighted fashion trends and repair costs as main barriers to repair versus discard or replacement decisions.

6.1.4. Data exchange at the end-of-life

At the end of a product's life, access to accurate and complete information on material composition, hazardous substances, and non-recyclable fibres is important. Today, such information is often unavailable or fragmented, hindering the efficient sorting for reuse and recycling.

Regarding sorting for reuse, it is normally performed through labour-intensive human inspection. Automated solutions cannot detect whether the garment is reusable or not except for some cases such as denim jeans, which are easily recognisable with artificial intelligence (Delre, A. et al., 2025).

Regarding sorting for recycling, it can be manually performed based on fibre composition information provided on labels, as required by the Textile Labelling Regulation. However, reading labels is often time consuming and their accuracy and availability are compromised due to removal or damage from wear over time (Cura et al., 2021). Conversely, sorters often use near-infrared spectroscopy for more precise automated identification of textiles composition. Despite its advantages, automated techniques have limitations when used on multi-layered items, fabrics with different fibres on the outer and inner layers, blends where the content of the minor material is lower than 5%, and dark colours.

A. Data exchange to facilitate sorting (UC13)

Given the context described, the DPP stands out as a means for end-of-life operators to retrieve relevant data. On the one hand, enhanced product information would allow the sorting of high-quality textiles for reuse, increasing their value and thus consumers demand (Wautelet and Ayed, 2024). On the other hand, DPPs would also facilitate the identification of fibre composition and purity, supporting their corresponding separation to provide homogeneous feedstock into recycling processes that allow better quality output. However, achieving these benefits effectively requires that the information in the DPP is really accurate so that the sorters can rely on it. Moreover, it requires that the data carrier is available and permanently attached to garments. Addressing this challenge requires innovative solutions for embedding identifiers that can withstand wear and

remain accessible throughout the product's lifecycle. Radio-Frequency Identification (RFID) and Near Field Communication (NFC) technology is being explored to develop alternatives in this regard.

6.2. Conceptual data needs elicitation

To translate the use cases identified in Section 6.1 into concrete DPP content requirements, the study systematically extracted all information elements listed under the 'Data Required' components of each use case (see Annex 1). This enabled the identification of both cross-cutting data fields that are essential across multiple interactions and more specific data needs that arise only in particular operational contexts.

The consolidated results are presented in **Table 4**, which summarises the data elements required across all use cases and indicates whether they represent *core* or *use-case-specific* requirements. This comparison forms the analytical foundation for prioritising DPP content and determining which information is indispensable.

Building on this comparison, the elicited data were organised into five overarching categories that reflect the logical structure of DPP content: product identification and classification, producer information and commercial context, product information, product compliance, and environmental impacts. **Table 4** links each data element to these categories and shows the use cases in which it appears, thereby connecting operational requirements directly to the proposed DPP data structure.

Table 4. Categorisation of data needs derived from the identified use cases (UC1–UC13)

Category	Data elements required across use cases	Use cases requiring this information
Product identification & classification	• Unique product identifier • Product category • Commodity or customs codes (where relevant) • Batch or lot number • Manufacturing date • Product mass and packaging information	UC1–UC6, UC11
Producer information & commercial transactions	• Manufacturer identity • Importer identity, if applicable • Economic operator responsible • Country of origin • Production site(s) and processing locations • Shipment or manifest identifiers (customs context)	UC1–UC6; UC11
Product information	• Fiber composition (*) • Components specification (*) • Repair instructions (*) • Repair services offered by brand • Care instructions (*) • Robustness score and related parameters (i.e. visual inspection, spirality, dimensional change) • Product guarantee • Presence of substances of concern	UC1–UC13
Sustainability-related parameters	• Recycled content and type of recycled inputs • Organic content • Recyclability score • Carbon or environmental footprint • Data enabling environmental monitoring	UC1–UC7, UC11
Product compliance	• Conformity documentation • Technical certificates and test results • Third-party certificates, if required • Validity of digital certificates • Compliance with procurement criteria • Customs verification metadata • Status flags indicating enforcement actions (e.g. investigation, withdrawal, recall)	UC1, UC2, UC3, UC6, UC11

Source: own elaboration

Based on the considerations in section 6.1, the data points can be prioritised balancing use case value, feasibility, data quality needs and barriers. For instance, the description of the use cases

related to repair highlighted that the analysis of the users' behaviour which did not highlight the lack of information among the main barriers to repair versus discard or replacement decisions. Thus, the data points 'repair instructions' and 'components specification' are marked with an asterisk in the table above to de-prioritise them as they may not provide benefits to compensate the efforts, costs and administrative burdens. 'Fiber composition' and 'care instructions' are also marked as these are disclosures required by other legislation (TLR), while including them in the DPP would be relevant to enable the identified ESPR use cases. Other data points under consideration under the revision of the TLR and described in section 5.1 would be also relevant in this regard, whereas they are left out from the analysis in the following sections as they are subject of a different dedicated study. Its final outputs will then need to be integrated in this framework in future updates.

7. Proposed DPP content

Building on the legal framework outlined in section 2 , and the methodological process described in section 3, this chapter presents the proposed DPP content for textiles apparel products. They derive directly from the data-needs elicitation process, taking into consideration the regulatory analysis, existing obligations, industry practices, and the use-case methodology mandated under the ESPR framework.

The data elements proposed in this chapter correspond to the four overarching categories: product identification and classification, producer information, product characteristics (including material, mechanical and chemical information, environmental footprint, recycled and organic content, manuals and instructions and other voluntary input) and compliance documentation.

In addition to the data points here presented, the DPP may accept other voluntary entries provided they do not duplicate, replace or overlap fields for which a definition and reference methodology have been established and must be properly distinguished from the regulated data.

Voluntary entries should be unrelated to sustainability unless it is explicitly defined in the preparatory study and incorporated into the delegated act. This restriction prevents green-washing and guarantees that only harmonised, methodologically sound indicators are used. Examples of voluntary entries could include logistical codes, payment terms or technical specifications required for commercial transactions. Access to these shall be restricted to parties demonstrating a legitimate interest, in accordance with data-protection and confidentiality requirements. Moreover, additional information for promoting resale may be included, if relevant.

7.1. Product identification and classification

Product identification and classification form the foundational layer of the Digital Product Passport for textiles apparel products, directly supporting the ESPR requirements under Articles 8 and 9 and the minimum information obligations set out in Annex III. The DPP must enable the unique and unambiguous identification of products placed on the EU market, ensure their traceability throughout the value chain, and support regulatory controls such as customs checks, market surveillance and public procurement. To meet these obligations, **Table 5** includes globally recognised identifiers, as well as harmonised trade and customs codes and assesses the level of readiness regarding their implementation considering current industry practices.

Table 5. Product identification and classification

Data Requirement	Reference methodology	Data type (XSD/JSON)	ESPR reference	Comments	Readiness
Unique product ID[40]	Serialised Global Trade Item Number (SGTIN) or equivalent, compliant with prEN18219	xsd:integer/ Number	Annex III (b)	SGTIN allows generation of unique item IDs built on the model-level GTIN-13 that is already widely used, compliant with JTC24 WG2 Module 1 and ISO/IEC 15459-6, followed by a serial number. This could be a 'voluntary' data field, in case a higher level of granularity is chosen (section 9.1)	Very low – Identifiers at item level are not a common practice and the level of complexity has been highlighted as High
Batch ID	GTIN + Lot number or equivalent, compliant with prEN18219	xsd:integer/ Number	Annex III (b)	GTIN + Lot number allows generation of unique batch IDs built on the model-level GTIN-13 that is already widely used, compliant with JTC24 WG2 Module 1 and ISO/IEC 15459-6.	Medium – Identifiers at batch level are a common practice but the definitions diverge
Model ID	GTIN - 13 or equivalent, compliant with prEN18219	xsd:integer/ Number	Annex III (c)	GTIN-13 is already widely used, compliant with JTC24 WG2 Module 1 and ISO/IEC 15459-6. SKU IDs are also used in industry normally for internal stock inventories, so they are typically internally defined, lack global uniqueness, and cannot support interoperable identification across a centralised or multi-actor system such as the DPP.	High – Already common practice
Product ESPR category	ESPR classification (knitted, woven, high denim product)	xsd:string/ String	Scope of the DA	Multiple stakeholders indicated that product categorisation is fragmented and often assign their own internal commercial categories. GS1 recommended using an existing product classification approach such as their Global Product Classification (GPC), but such commercial classifications lack technical information required for ESPR enforcement. HS codes also lack technical information required for ESPR enforcement.	Medium – This is specific to the ESPR requirements so not currently in practice, but the level of complexity can be assessed as Low
Product PEFCR category	PEFCR for Apparel and Footwear	xsd:string/ String	Scope of the DA	This would serve for the identification of the benchmark for the definition and verification of the information requirement on carbon/environmental footprint.	Medium – This is specific to the ESPR requirements so not currently in practice,

[40] Identifier which is guaranteed to be unique among all identifiers used for those objects and for a specific purpose (stable among the product life cycle)

					but the level of complexity can be assessed as Low
Commodity Code: HS code (6-digit code)	WCO Harmonized System (HS)	xsd:integer/ Number	Annex III (d)	HS is the most readily available form of product identification code for customs tariff numbers. The first two digits (61, 62) refer to knitted and not knitted apparel and clothing, with the following numbers specifying to the type of article and the materials. HS codes cannot substitute the ESPR classification as they do not distinguish denim from other non-knitted products.	Very high –Already common practice and in many cases, mandatory
Commodity Code: TARIC Code (10-digit code)	TARIC XML Schema	xsd:integer/ Number	Annex III (d)	TARIC codes incorporate the first 6 digits of the HS code plus 4 additional digits (the first two further classify the product for EU exports and the final two identify tariff rates for imports).	Very high – Already common practice and in many cases, mandatory

Source: own elaboration

7.2. Producer identification

Producer identification covers the set of data elements required to uniquely and reliably identify all economic operators responsible for placing textile products on the EU market. In line with Articles 8–10 of the ESPR and Annex III, the DPP must include harmonised identifiers for manufacturers, importers and other responsible operators, ensuring traceability across the value chain and supporting regulatory controls such as customs checks, market surveillance and procurement verification. **Table 6** gathers the relevant data points, reference methodologies and the assessed level of readiness for implementation considering current industry practices.

To be noted that, while the ESPR definition for economic operator includes authorised representatives, distributors, dealers and fulfilment service providers, the primary responsibility for the DPP rests with the manufacturer, or, if the manufacturer is not established in the Union, with the importer. Thus, data points regarding operators other than the manufacturer and the importer would not be needed unless required for carrying out the tasks set out in Article 4 of Regulation (EU) 2019/1020 or Article 15 of Regulation (EU) 2023/988, or similar tasks pursuant to other Union law applicable to the product (Annex III (k) of the ESPR).

For a detailed description of DPP roles and responsibilities, see section 2.1.1.

Table 6. Producer identification

Data Requirement	Reference methodology	Data type (XSD/JSON)	ESPR reference	Comments	Readiness
Manufacturer unique operator identifier	Party Global Location Number[41] (Party GLN) or equivalent, compliant with prEN18219, and Economic Operators Registration and Identification (EORI), if available[42]	xsd:integer/ Number	Annex III (g)	Even when the responsibility falls to the importer, numerous data points concerning product characteristics and performance must be provided by the manufacturer. Therefore, it is crucial to maintain the manufacturer identifier and contact as key data points in every instance to guarantee traceability for verification purposes, also when established outside the EU. The identifiers encode the identity and location of a legal entity or facility in a globally unique and structured way, while free-text fields are useful for human-readable display and are normally recorded as free text, linked to identifiers in GS1's system.	High – Already widely used or common practice
Manufacturer name	Free text ISO/IEC 6523	xsd:string/ String	Annex III (g)		
Manufacturer postal address	Free text ISO/IEC 6523	xsd:string/ String	Annex III (g)		
Manufacturer contact information	[email or other electronic means]	xsd:anyURI/ String	Annex III (g)		
Unique facility identifier(s)	Global Location Number (GLN), or equivalent, compliant with prEN18219	xsd:integer/ Number	Annex III (i)	Note that facility refers to the place where the product was manufactured. GLN is aligned with JTC 24 Module 1. Open Supply Hub (OSH) has been cited as another source for facility identifiers for supplier due diligence and reporting, but it is not a formal standardised system and depends on data contributors and a matching algorithm.	High – Already widely used

41 A Party GLN is not always a physical location, but often a legal entity identifier.

42 The EORI is an identification number, unique throughout the European Union, assigned by the customs authority to economic operators to be used in their relations with customs authorities throughout the Union. The application for the EORI number is not subject to a specific format. It is requested at the Electronic Headquarters of the Tax Agency or in writing to the Customs and Excise Department corresponding to the interested party's tax domicile. Even when the manufacturer is established in the EU, the EORI is mandatory for trading across national borders, so operators that have it would disclose it as a means of identification. It would not be the case of EU-based manufacturers who produce and sell domestically.

Importer unique operator identifier	Party Global Location Number (Party GLN), or equivalent, compliant with prEN18219, and Economic Operators Registration and Identification (EORI)[43]	xsd:integer/ Number	Annex III (j), (h)	Only applicable when the manufacturer is not established in the EU. The identifiers encode the identity and location of a legal entity or facility in a globally unique and structured way, while free-text fields are useful for human-readable display and are normally recorded as free text, linked to identifiers in GS1's system.	High – Already widely used or common practice
Importer name	Free text ISO/IEC 6523	xsd:string/ String	Annex III (j)		
Importer postal address	Free text ISO/IEC 6523	xsd:string/ String	Annex III (j)		
Importer contact information	[email or other electronic means]	xsd:anyURI/ String	Annex III (j)		
Other responsible operator identifier	Party Global Location Number (Party GLN), or equivalent, compliant with prEN18219, and Economic Operators Registration and Identification (EORI)	xsd:integer/ Number	Annex III (k)	These refer to the economic operator established in the Union responsible for carrying out the tasks set out in Article 4 of Regulation (EU) 2019/1020 or Article 15 of Regulation (EU) 2023/988, or similar tasks pursuant to other Union law applicable to the product. They may differ from the manufacturer and importer, particularly if there is an authorised representative with a written mandate from the manufacturer to perform specific tasks on their behalf. Also, in situations where no manufacturer, importer, or authorised representative is established within the Union, the fulfilment service provider assumes this responsibility. The identifiers encode the identity and location of a legal entity or facility in a globally unique and structured way, while free-text fields are useful for human-readable display and are normally recorded as free text, linked to identifiers in GS1's system.	High – Already widely used or common practice
Other responsible operator name	Free text ISO/IEC 6523	xsd:string/ String	Annex III (k)		
Other responsible operator address	Free text ISO/IEC 6523	xsd:string/ String	Annex III (k)		

[43] Since it is mandatory for trading within the EU, all importers have it and would disclose it as a means of identification.

Other responsible operator contact information	[email or other electronic means]	xsd:anyURI/ String	Annex III (k)		

Source: own elaboration

7.3. Product information

Product information comprises the technical, material and performance characteristics necessary to describe them and support consumer choices, traceability, safe use and end-of-life management.

Under the ESPR, only a limited subset of this information is legally required horizontally for all product groups—particularly the disclosure of Substances of Concern in accordance with Article 7(5).

Specifically for textiles apparel products, the preparatory work has identified information on the performance of the product in relation to several product parameters that may be relevant to address the identified environmental hotspots (Article 7(2)(b)). These have been already outlined in the use cases definitions (annex 1) and the conceptual data needs elicitation (section 6.2) in this report and reflect the current state of proposed information requirements in the ESPR preparatory study for textiles products.

Among them, this chapter also includes the proposal of some voluntary data points that can be considered, as the ESPR gives flexibility for their inclusion, provided such information enhances the usefulness of the DPP for stakeholders and supports sustainability objectives. They also come from the use cases definitions and the conceptual data needs elicitation but have been de-prioritised for different reasons specified in the dedicated row in the table below. These should be validated through stakeholder input, informed by established industry practices, and assessed for their expected usability in real operational contexts across the textiles value chain.

As for additional product information requirements regarding user manuals, instructions, warnings or safety information, as required by other Union law applicable to the product (Annex III (f)), care instructions as potentially required under the revision of the Textiles Labelling Regulation have been identified as relevant data points.

Table 7 gathers all the identified relevant data points under this category, including the reference methodologies for their definition, data types and the assessed level of readiness for implementation considering current industry practices.

Table 7. Product information.

Data requirement	Reference methodology	Data type (XSD/JSON)	ESPR reference	Comments	Readiness
Material information					
Fiber composition	Textiles Labelling Regulation (clean dry mass)	xsd:string/ String	Annex I(d), Annex III(a)	In addition to be a disclosure under other EU law, reliable information on fibre composition would facilitate sorting and thus recycling.	Very high – Already mandatory and common practice
Components specification	GTIN-13 or equivalent, compliant with prEN18219	xsd:integer/ Number	Article 7(2)(b), Annex I(b)	This data point could be considered 'voluntary'. The lack of information has not been identified among the main barriers to repair versus discard or replacement decisions. Thus, this data point could be de-prioritised as it may not provide benefits to compensate the efforts, costs and administrative burdens.	Medium – Components should already have GTIN identifiers, while their disclosure in the textile sector is not common practice
Mechanical properties					
Robustness score	Methodology to be proposed in detail under ESPR DA of textiles (described in the current ESPR preparatory study).	xsd:integer/ Number	Article 7(2)(b), Annex I(a)	This data point is among the potential information requirements proposed in the ESPR preparatory study for textiles products.	Medium – This is specific to the ESPR requirements so not currently in practice, but the level of complexity can be assessed as Low as it derives from the results of tests widely used in current industry practices (see **Table 8** related data points)
Chemical properties					
Name or numerical code of the substances of concern present in the product	(i) IUPAC name, or another international name when IUPAC name is not available; (ii) other names, including usual name, trade name, abbreviation; (iii) EC number, as indicated in the EINECS, the ELINCS or the	xsd:string/ String or xsd:integer/ Number	Art 7(5), Annex I(f)	Exempting those that are not intentionally added to the final products and that are not present in the final product but that are related to the life cycle of the products.	Low – Not current practice. Certifications related to chemicals (e.g. OEKO-TEX Standard 100) are limited to a binary disclosure (pass/fail) against

	NLP list or the number assigned by the ECHA, if available and appropriate; (iv) CAS name and number, if available[44].				regulatory thresholds. Other than to meet obligations for SVHCs under the Waste Framework Directive Article 9 (as regards SCIP database) information on concentration ranges in articles is generally not reported. Moreover, location data is not reported. Stakeholders consistently indicate that such data is not available in a form that could be disclosed reliably or proportionately.
Location of the substances of concern within the product	Free text	xsd:string/ String	Art 7(5), Annex I(f)		
Concentration, maximum concentration or concentration range of the substances of concern, at the level of the product	Values expressed in % w/w in relation to the weight of an article as defined in the REACH Regulation	xsd:integer/ Number	Art 7(5), Annex I(f)	Exempting those that are not intentionally added to the final products and that are not present in the final product but that are related to the life cycle of the products.	
Relevant instructions for the safe use of the product	Free text Standard content proposed, in case no instructions are needed: "The identification of the substance is enough to allow safe use".	xsd:string/ String	Art 7(5), Annex I(f)		
Information relevant for disassembly, preparation for reuse, reuse, recycling and the environmentally sound management of the product at end-of-life	Free text	xsd:string/ String	Art 7(5), Annex I(f)		
Recyclability					
Recyclability score	Methodology to be proposed in detail under ESPR DA of textiles (described in the current ESPR preparatory study).	xsd:integer/ Number	Annex I(d), III(a)	This data point is among the potential information requirements proposed in the ESPR preparatory study for textiles products.	Medium – This is specific to the ESPR requirements so not currently in practice, but the level of complexity

[44] Abbreviations stand for: International Union of Pure and Applied Chemistry (IUPAC), European Community (EC) number, European Inventory of Existing Commercial Chemical Substances (EINECS), European List of Notified Chemical Substances (ELINCS), No Longer Polymer (NLP) list, European Chemicals Agency (ECHA), Chemical Abstract Service (CAS).

					can be assessed as Low as it derives from the information widely available in current industry practices
Recycled content					
Recycled content	Value expressed in % w/w in relation to the product's weight. Methodology to be proposed in detail under ESPR DA of textiles (based on ISO 14021:2016)	xsd:integer/ Number	Annex I(h)	This data point is among the potential information requirements proposed in the ESPR preparatory study for textiles products. It would be also needed for the verification of a potential performance requirement of minimum recycled content as proposed in the ESPR preparatory study for textiles products.	Medium – There are already brands disclosing this information through third-party certifications compliant with the ISO standard, while it is not common practice
Origin of the recycled content	Post-industrial, pre- and post-consumer waste (in line with other textile-related EU files such as that for the definition of the End of Waste criteria). Potential additional information to distinguish secondary material from textiles waste or from other sources and EU / non-EU production.	xsd:string/ String	Annex I(h)	This data point is among the potential information requirements proposed in the ESPR preparatory study for textiles products.	Low – Disclosing this information is not common practice, not even for the brands that disclose the recycled content. However, third-party certifications such as GRS allow the distinction between pre- and post-consumer waste as per the ISO 14021:2016[45].
Other environmental law (organic and ecolabels)					
Organic content	Value expressed in % w/w in relation to the product's weight.	xsd:integer/ Number	Annex III (a)	This data point could be considered 'voluntary' as it would enable consumers to choose apparel containing organically	Medium/low – There are already brands disclosing this

[45] Important to note that definitions in the ISO 14021:2016 do not align with definitions in ESPR (for detailed definitions, please see the textiles ESPR preparatory study). 'Post-consumer' waste in the ISO means the sum of 'pre- and post-consumer' in ESPR, while 'pre-consumer' in the ISO is 'post-industrial' in ESPR.

	Methodology to be proposed in detail under ESPR DA of textiles (in compliance with Organic Regulation (EU) 2018/848, as described in the ESPR preparatory study)			produced fibres over others. This does not necessarily mean a more 'sustainable' choice.	information through third-party certifications, while it is not common practice; the definitions of 'organic' vary
EU Ecolabel	EU Ecolabel	xsd:boolean/ Boolean	Annex III(a)	This is a 'voluntary' data point from other EU law.	Low –Some certify their products using this instrument to showcase their excellence by complying to some environmental criteria, but it is not common practice, especially in apparel, as it remains voluntary.
Product footprint					
Product carbon footprint – Class of performance	Methodology to be proposed under ESPR DA of textiles based on PEFCR (climate change impact category, partial consideration of lifecycle stages as described in the ESPR preparatory study).	xsd:integer/ Number	Annex I(n)	The classes of performance should be developed considering the efforts, costs and administrative burdens related to the data collection and calculation of footprint indicators.	Very low – This is not common practice
Product environmental footprint– Class of performance	Methodology to be proposed under ESPR DA of textiles based on PEFCR (single score, partial consideration of lifecycle stages as described in the ESPR preparatory study).	xsd:integer/ Number	Annex I(n)		Very low – This is not common practice
Manuals and instructions					
Care instructions	Textiles Labelling Regulation ISO 21600:2019	xsd:string/ String	Annex III(a)(f)	This could be required under other Union law while being relevant for maintenance under ESPR.	High – Already common practice and mandatory in some national

					legislation, while not yet harmonised at EU level
Repair instructions	Free text (webpage link)	xsd:anyURI/ String	Article 7(2)(b), Annex I(b)	It could be considered 'voluntary'. The lack of information has not been identified among the main barriers to repair versus discard or replacement decisions. Thus, this data point could be de-prioritised as it may not provide benefits to compensate the efforts, costs and administrative burdens.	Low – This is not common practice
Contact of repair services offered by brand	Free text ISO/IEC 6523	xsd:anyURI/ String	Article 7(2)(b), Annex I(b)	It could be considered 'voluntary', as it would only apply in case the brand offers repair services.	Medium – its disclosure is not common practice, but the information is available to the responsible operator, so the level of complexity is assessed as Low
Warranty duration / Commercial guarantee duration above the 2-year legal minimum	ISO 22059:2020 Consumer Rights Directive as amended by the Empowering Consumers Directive	xsd:integer/ Number	Article 7(2)(b), Annex I(a)	This data point replaces the conceptual data point 'Product guaranteed lifetime'. The commercial guarantee label (above the 2 year legal minimum) is required under other Union law while being relevant for maintenance under ESPR.	Medium – its disclosure is not common practice, but the information is available to the responsible operator, so the level of complexity is assessed as Low

Source: own elaboration

7.4. Compliance documentation

Finally, the ESPR requires DPPs to include any compliance documentation mandated by this Regulation or other Union law (Annex III(e)), such as declarations, certificates and regulatory data needed to demonstrate conformity with legislation applicable to textiles apparel products.

Regarding the current proposal considers two implementation scenarios for the verification of submitted environmental performance data:

— Self-declaration with third-party verification, in which the DPP includes only evidence of independent verification process that is a conformity certification, without requiring disclosure of the underlying calculation parameters in DPP.

— Self-declaration, in which the manufacturer provides a conformity declaration together with a defined set of additional calculation parameters and technical documentation enabling Market Surveillance Authorities to recalculate the results (potentially with restricted access, as discussed in the access-rights section 9.2). However, it is important to note that verifying some data points may demand traceability that stretches across many tiers of the supply chain, far beyond the economic operator responsible for creating the DPP. For example, registering the location of actors involved from the ginning of cotton, or obtaining information necessary to establish a chain-of-custody system for recycled or organic content verification, would be required. Collecting such detailed information would impose a substantial burden and cost on manufacturers and importers, while its reliability would remain uncertain as the analysis of the supply chain showed that each actor has typically access only to its immediate suppliers. In addition, market-surveillance authorities could be faced with an overwhelming volume of data to check, a task that may exceed their limited resources and lead to weak or ineffective verification.

Table 8 gathers the main DPP data points related to the verification of compliance of the information requirements outlined in the sections above, reference methodologies and level of readiness for implementation considering current industry practices.

Table 8. Compliance documentation

Data requirement	Reference methodology	Data type (XSD/JSON)	ESPR reference	Comments	Readiness
Mechanical properties					
Visual inspection	Test results ISO 15487	xsd:integer/ Number	Article 7(2)(b), Annex I(a), III(e)	These data points are needed for the verification of a potential information requirement on the robustness score as defined in the ESPR preparatory study for textiles products. These are relevant in the self-declaration scenario only.	Medium – Disclosing these data points is not current practice, but the level of complexity can be assessed as Low as these tests are widely used in current industry practices for internal quality checks
Spirality	Test results ISO 16322-3 (%)	xsd:integer/ Number	Article 7(2)(b), Annex I(a), III(e)		
Dimensional change	Test results ISO 3759 (%)	xsd:integer/ Number	Article 7(2)(b), Annex I(a), III(e)		
Conformity certification (third-party verification)	Verification rules specified in ESPR DA of textiles	xsd:string/ String	Annex III(e)		
Conformity declaration (self-declaration)		xsd:string/ String			
Recyclability					
Conformity certification (third-party verification)	Verification rules specified in ESPR DA of textiles	xsd:string/ String	Annex III(e)		
Conformity declaration (self-declaration)		xsd:string/ String			
Recycled content					
Weight (excluding trims)	Value expressed in kg EN ISO 80000-1 (Quantities and units) Textiles Labelling Regulation (clean dry mass)	xsd:integer/ Number	Annex III(e)	These data points are needed for the verification of potential information and performance requirements on the recycled content as defined in the ESPR preparatory study for textiles products.	High – Disclosing this data point is not current practice, but the level of complexity can be assessed as Low
Amount of recycled material	Value expressed in kg.	xsd:integer/ Number	Annex I(h), III(e)		Medium – There are already brands disclosing the recycled content through third-party certifications compliant with

	Methodology to be proposed in detail under ESPR DA of textiles (based on ISO 14021:2016)			These are relevant in the self-declaration scenario only.	the ISO standard, while it is not common practice
Conformity certification (third-party verification)	Verification rules specified in ESPR DA of textiles	xsd:string/ String	Annex III(e)		Medium – There are already brands disclosing the recycled content through third-party certifications compliant with the ISO standard and self-declarations, while it is not common practice
Conformity declaration (self-declaration)		xsd:string/ String			
Organic content					
Weight (excluding trims)	Value expressed in kg EN ISO 80000-1 (Quantities and units) Textiles Labelling Regulation (clean dry mass)	xsd:integer/ Number	Annex III(e)	These data points are needed for the verification of a potential information requirement on the organic content as defined in the ESPR preparatory study for textiles products. These are relevant in the self-declaration scenario only.	High – Disclosing this data point is not current practice, but the level of complexity can be assessed as Low
Amount of organic material	Value expressed in kg. Methodology to be proposed in detail under ESPR DA of textiles (in compliance with Organic Regulation (EU) 2018/848)	xsd:integer/ Number	Annex III (e)		Medium/low – There are already brands disclosing the organic content through third-party certifications so would have this information available, while it is not common practice; the definitions of 'organic' vary
Conformity certification (third-party verification)	Verification rules specified in ESPR DA of textiles	xsd:string/ String	Annex III(e)		Medium/low – There are already brands disclosing the organic content through third-party certifications, while it is not common practice; the definitions of 'organic' vary
Conformity declaration (self-declaration)		xsd:string/ String			
Product footprint					
Product carbon footprint – Absolute value	Value expressed in kg CO_2e/kg. Methodology to be proposed under ESPR DA of textiles based on PEFCR (climate change impact category, partial consideration of lifecycle stages).	xsd:integer/ Number	Annex I(n), III(e)	These data points are needed for the verification of a potential information requirements on the carbon or environmental footprint as defined in the ESPR preparatory study for textiles products.	Very low – This is not common practice
Product carbon footprint – Compared to a benchmark	Value expressed in % as compared to the benchmark in the PECFR.				Very low – This is not common practice

	Methodology to be proposed under ESPR DA of textiles based on PEFCR (climate change impact category, partial consideration of lifecycle stages).			These are relevant in the self-declaration scenario only.	
Product environmental footprint – Absolute value	Value expressed in environmental points/kg. Methodology to be proposed under ESPR DA of textiles based on PEFCR (single score, partial consideration of lifecycle stages).	xsd:integer/ Number	Annex I(n), III(e)		Very low – This is not common practice
Product environmental footprint – Compared to a benchmark	Value expressed in % as compared to the benchmark in the PECFR. Methodology to be proposed under ESPR DA of textiles based on PEFCR (single score, partial consideration of lifecycle stages).				Very low – This is not common practice
Weight	Value expressed in kg EN ISO 80000-1 (Quantities and units) It needs to align with the methodology of the PEFCR, so it refers to the average final product weight (including trims), which reflects the mass after raw material acquisition, manufacturing, and assembly.	xsd:integer/ Number	Annex III(e)		High – Disclosing this data point is not current practice, but the level of complexity can be assessed as Low
Conformity certification (third-party verification)	Verification rules specified in ESPR DA of textiles	xsd:string/ String	Annex III(e)		Very low – This is not common practice
Conformity declaration (self-declaration)		xsd:string/ String			Very low – This is not common practice while there is a PEFCR setting the rules for their calculation

Note: In the self-declaration scenario, additional data points and technical documentation—specified in the relevant calculation methodology in the delegated act—may include, among others: chain-of-custody model information, energy-mix data, and digital traceability records.

8. Vocabulary framework

The development of a coherent and interoperable DPP dictionary is central to the implementation of the ESPR. For each product group, the dictionary should provide a uniform definition of each DPP data property—data template defining the meaning, structure, units, metadata and data types of every required DPP data element. The dictionary should draw on established industrial vocabularies and ontologies to ensure compatibility with existing data practices and seamless integration with sector-specific information systems. At the same time, it should comply with the principles and requirements defined in the standardisation work to ensure cross-sectoral interoperability.

The previous section provided the full proposal of data points for their inclusion in the DPP as well as the reference methodologies for their definitions, units and data types for the development of a dedicated dictionary.

This section provides an overview of the vocabulary landscape relevant to the DPP for textiles, mapping relevant existing sectoral ontologies and dictionaries. They are subsequently cross-checked with the DPP Data Requirement lists in section 7 to analyse their appearances in other frameworks and their alignment.

While the definition of the DPP dictionary and its full digital format lies outside the scope of this study, this analysis aims to support its future development by providing a review upon which to build to ensure compatibility with existing data practices and cross-sectoral interoperability.

Despite building upon these, the dictionary should be created and owned by the Commission to ensure comprehensive oversight and management. By controlling changes and updates to the semantics, the Commission can ensure that the dictionary remains consistent, accurate and compliant with the core principles delineated in the Regulation and JTC24 standards, such as accessibility and interoperability. Furthermore, this approach will facilitate the alignment of the dictionary with evolving regulatory needs and stakeholder expectations.

8.1. Product-specific vocabularies

Ontologies provide formal data models, defining general types of things and their relationships to enable machine reasoning. The work under the Cirpass project (O'Regan and Saklampanakis, 2025) identified the following sectoral ontologies as relevant for the textiles sector:

- Circular Economy Ontology Network (CEON) - Textile Module[46]: This is a highly granular model for textile-specific resources. It defines classes for materials, production processes, properties and even includes complex 'Statement' classes for reporting recycled content and chemical thresholds.
- UNECE Conceptual Product Circularity Data Model[47]: Developed by UN/CEFACT, this model focuses on data supporting circular business models designed to be cross-industry and global in scope. It identifies core entities such as the Product, Economic Operator, Digital Product Passport, and Substances of Concern.

[46] Available at: Circular Economy Ontology Network (CEON) - Textile Module

[47] Available at: BRS-ProductCircularityDataUseCase_v1.0-Ext-TL_TT_BRS_Part II-UC_CCBDA.pdf

— circularity.ID® Open Data Standard[48]: This ontology and data protocol focuses specifically on making product data available for circularity checks, sorting, and recycling.

— TRICK/eBIZ[49]: The TRICK project utilises an ontology based on the eBIZ specification framework, specifically adapted to enable verifiable claims regarding textile circularity.

In addition, there are web vocabularies and data dictionaries that, despite lacking many of the logical constructors that enable automated inference, provide standardised terms and definitions for naming attributes, often integrated with broader web standards like Schema.org.

— GS1 Web Vocabulary[50]: as referenced in several parts of this report, GS1 maintains specific vocabularies for clothing and footwear.

— Circular Product Data Protocol (CPDP): Led by EON, this protocol proposes a circularity-focused data model for product and material-level data. However, instead of proposing new semantics, it calls upon and leverages existing standards from GS1, Sustainable Apparel Coalition, Open Supply Hub, UNECE, etc.

The tables below show how the proposed data points appear in these existing ontologies and dictionaries and assess their alignment.

1. Product Identification & Classification

Regarding product identification and classification, the data points unique product ID, batch ID, model ID and the commodity codes have been found in existing dictionaries or ontologies (**Table 9**). The data points related to product ESPR and PEFCR categories have not been found in existing dictionaries or ontologies, due to being specific to the ESPR framework.

Table 9. Product identification and classification in existing dictionaries and ontologies

Data Point	Reference Methodology	Other Dictionaries/Ontologies	Definition Match?
Unique product ID	SGTIN (GS1) or equivalent, compliant with prEN18219	**UNECE:** Global Serial ID; **circ.ID:** sgtin; **GS1:** productID	**High:** All sources explicitly adopt the GS1 SGTIN as the unique instance-level identifier.
Batch ID	GTIN (GS1) + Lot number or equivalent, compliant with prEN18219	**UNECE:** Batch ID; **CEON:** BatchOfObjects -> batchID	**Partial:** The sources use this data point to group products, though they do not specifically use GTIN+Lot structure as reference methodology.
Model ID	GTIN-13 (GS1) or equivalent, compliant with prEN18219	**UNECE:** Model ID; **circ.ID:** gtin	**High:** All align on the trade-item level identification using GS1 standards.
Commodity Code	HS (6-digit) / TARIC (10-digit)	**UNECE:** Classification (code type); **GS1:** additionalProductClassification	**Partial:** The sources provide the "Classification" container for these codes.

[48] Available at: circularity.id/open-data-standard.html

[49] Available at: - On Line Dictionary - TRICK

[50] Available at: GS1 Web Vocabulary

Source: own elaboration

2. Producer identification

As for producer identification, the data points operator ID, operator address, facility ID and contact information have been found in existing dictionaries or ontologies (**Table 10**). As compared to the proposal of data points in the previous section, they do not differentiate whether the operator corresponds to the manufacturer, the importer or other.

Table 10. Producer identification in existing dictionaries and ontologies

Data Point	Reference Methodology	Other Dictionaries/Ontologies	Definition Match?
Operator ID	Party GLN (GS1) or equivalent, compliant with prEN18219/ EORI	**UNECE:** Global ID / EORI; **circ.ID:** gln; **TRICK:** PARTIn	**High:** All cited frameworks use GLN (GS1) or EORI (Customs) for unique operator identification.
Operator Address	ISO/IEC 6523	**UNECE:** Address entity; **circ.ID:** street_address, city, postal_code	**High:** UNECE explicitly cite ISO/IEC 6523 for structured addressing. Circ.ID does not explicitly mandate an international standard, but is designed to be semantically interoperable with other major frameworks
Operator contact	[email or other electronic means]	**UNECE:** Telephone Number, Email Address **TRICK:** PARTIn -> contact references **GS1 Web:** Organization -> customerSupportCentre	**Partial:** No unified
Facility ID	GLN (GS1) or equivalent, compliant with prEN18219	**UNECE:** Facility -> Global ID; **circ.ID:** oar (Open Apparel Registry)	**High:** All use global identifiers, though circ.ID adds OAR as an industry-specific alternative to GLN.

Source: own elaboration

3. Product information and compliance documentation

Regarding product information and compliance documentation, **Table 10** maps how existing dictionaries or ontologies refer to terms related to most of the data points, with some of them differing in the methodologies and type of data formats in the proposal of the previous section.

The data points for which an entry in the analysed dictionaries and ontologies have not been found include location of the SoC, instructions for end-of-life disposal, origin of the recycled content, contact of repair services offered by brand or specific compliance documentation and related data points for its verification when self-declared.

Table 11. Product information in existing dictionaries and ontologies

Data Point	Reference Methodology	Other Dictionaries/Ontologies	Definition Match?
Fiber Composition	TLR (Clean dry mass)	**CEON:** TextileProductCompositionDisclosureStatement; **circ.ID:** material_composition	**High:** All follow the percentage-by-weight disclosure. Circ.ID includes trims.
Components specification	GTIN-13 (GS1) or equivalent,	**CEON:** includesTrims; **GS1:** includedAccessories	**Low:** The ontologies do not specify the model of the trims.

	compliant with prEN18219	**circ.ID:** material_composition;	CEON and GS1 include a Boolean to indicate whether there are trims. In Circ.ID, trims are included in material_composition.
Weight	EN ISO 80000-1 TLR (clean dry mass) and PEFCR	**circ.ID:** net_weight; **UNECE:** Net Weight; **GS1:** netWeight	**Partial:** The semantics found refer to the weight of the total product, including the textile part as well as all attached trims and additionals. They do not refer to the textile part only nor explicitly cite EN ISO 80000-1.
Robustness	Methodology in the ESPR prep study	**UNECE:** Sustainability Score Index (type Stress and Aging Resistance), Conformity Attestation (type Test Results, Inspection Results); **TRICK:** TEXQualityRpt; **circ.ID:** circular_design_strategy -> Physical Durability, Technical Information URI; **CEON:** ResourceQuality, TextileDataSheet	**Partial:** While the methodologies do not align, there are vocabularies for technical attributes and test results.
Substances of Concern (SoC)	IUPAC / CAS / EC / % w/w (REACH)	**UNECE:** Substance of Concern (ID/Name/Max Limit); Instructions -> Repair; **CEON:** TextileChemicalSubstanceThresholdStatement; **circ.ID:** REACH / ZDHC compliance; disassembly_instructions; **GS1 Web:** instructionsForUse	**Partial:** All adopt CAS/EC numbers as the primary identifier and % w/w (weight by weight) as the measurement metric showing high alignment with the reference methodologies identified for the proposed related data points. Regarding instructions, the ontologies are also aligned, providing a URI/Text field. However, no entries have been found in existing sources regarding other proposed data points, e.g. location of the SoC, or instructions for end-of-life disposal.
Recyclability	Methodology in the ESPR prep study	**CEON:** TextileProductDesignForRecycling; **UNECE:** Sustainability Score Index (Type: Recyclability); **circ.ID:** Material Cyclability; **GS1:** consumerRecyclingInstructions	**Low:** The existing related vocabularies refer to Booleans to indicate whether recyclability was considered in the design or information to sorters and consumers but do not align with the methodology for a score proposed.
Recycled Content	% w/w (ESPR methodology based on ISO 14021:2016)	**UNECE:** Recycled Material Content; **CEON:** PostConsumerRecycledCompositionStatement; **circ.ID:** is_recycled	**Partial:** All differentiate between pre-consumer and post-consumer waste in line with ISO 14021.
Organic Content	% w/w (Reg (EU) 2018/848)	**UNECE:** Sustainability Claim/Statement; **circ.ID:** certification_standard	**Partial:** Ontologies provide a general "Statement" or "Certificate" field, while the proposed data point requires a value and specifies the EU Organic Regulation methodology.
EU Ecolabel	EU Ecolabel	**circ.ID:** certification_standard -> EU Ecolabel, certification_file; **UNECE:** Label (type EU eco	**Partial:** All provide a general certificate file, only some

		label); **CEON:** TextileProductCertification; **GS1:** certification; **TRICK:** SRVindicatorsDeclaration	allowing specifically the indication of the EU Ecolabel.
Carbon/Env. Footprint	PEFCR (Climate Change / Single Score)	**UNECE:** Environmental Footprint (Impact Category/Value); **TRICK:** PEFInformationSupply	**Partial:** The proposed requirement defines the *methodology* (PEFCR), while the ontologies define the *data containers* to hold the results (Impact Category/Value).
Care Instructions	TLR / ISO 21600:2019	**UNECE:** Instructions -> Care; **circ.ID:** care_guide; **GS1 Web:** consumerUsageInstructions	**High:** All allow free text containing the usage instructions
Repair Instructions	Free text	**UNECE:** Instructions -> Repair; **circ.ID:** disassembly_instructions; **GS1 Web:** instructionsForUse	**Partial:** Ontologies provide a URI/Text field for these instructions. This served to revise a preliminary proposal in Table 11 of using free text to insert the instructions directly on the DPP, based on the current practices.
Warranty Duration	ISO 22059:2020 / Consumer Rights Directive as amended by Empowering Consumers Directive	**UNECE:** Warranty Period; **GS1 Web:** manufacturersWarranty	**High:** Aligned on providing a period (Duration/Date) for warranty validity.

Source: own elaboration

9. DPP system information (DSI)

9.1. Granularity

Granularity refers to level of detail at which product-related data are collected, stored, and tracked in the DPP context. Defining an appropriate level of granularity is critical, as it determines the traceability, consistency, and verifiability of information across the value chain. Higher levels of granularity require more precise tracking and verification of data, as well as more sophisticated data management systems and robust traceability infrastructures.

The ESPR identifies three possible levels of granularity: **model, batch and item level**, whose definitions will be established through product-specific delegated acts. Yet, Recital 33 provides indicative descriptions, as introduced in section 2.1.4.1, referring to a *model* as a set of units with similar technical characteristics relevant for ecodesign requirements, a *batch* as a subset produced in a specific plant at a specific time and an *item* as a single unit. .

JTC 24 provides further guidance for the identification of an adequate level of granularity: model-level would facilitate inventory control, product categorisation and harmonisation of product information among economic operators; batch-level would be appropriate when it is necessary to trace a set of products manufactured at the same site and with comparable characteristics ; and item-level can be applied in specific use cases such as repair and refurbishment or when detailed information on individual products is required.

The Cirpass report (Cirpass-2, 2025) provides an analysis of the costs and benefits associated with each level of granularity for the textiles sector (**Table 12**). It distinguishes between the granularity of the identifiers associated with DPPs (UPI) and the granularity required for the rest of the data points. According to their proposal, requiring item-level product identifiers while limiting the other disclosures to lower, less burdensome granularity could provide a long-term benefit allowing the DPP to easily scale towards the highest level when data become available.

Table 12. Advantages and disadvantages of the different granularity levels

Granularity level	Advantages	Disadvantages
Model-level	*Disclosure granularity* • Lower IT and infrastructure demands, aligns with existing IT systems • Easier implementation for SMEs • Aligns with existing labelling practices • Suitable for e-commerce pre-purchase transparency *UPI granularity* • Cost-effective identifier issuance	*Disclosure granularity* • Limited supply chain transparency; cannot capture country of origin or specific raw material sources • Could correspondingly impact usefulness of DPP data for market surveillance authorities • If data is vague and proven to be inaccurate, could impact DPP credibility and perceived usefulness *UPI granularity* • More difficult to integrate more granular data from later lifecycle phases (such as actual use, resale, repair etc.) • Also presents challenges for product recalls
Batch-level	*Disclosure granularity* • More precise data than model-level • Supports targeted recalls and audits • Improves supply chain transparency • Provides market authorities with more reliable oversight and monitoring	*Disclosure granularity* • Potentially introduces a complexity for online retail, as online marketplaces cannot ensure that the consumer gets an item from the exact batch displayed *UPI granularity* • Many companies have their own identifiers prepared in advance of the actual production of the garment, and it can be difficult to align these with harmonised batch identifiers • Products from the same 'production batch' can be a part of different shipping batches with different carbon footprints (if distribution is considered)
Item-level	*Disclosure granularity* • Most suitable for circular economy support, enables full lifecycle tracking and updates • Supports Extended Product Responsibility (EPR), ensuring that each product is tracked throughout its entire life • Can support product-as-a-service models *UPI granularity* • Maximum flexibility, as they can be associated with models or batches • Simplified logistics for attaching labels: printed item-level labels can be applied indistinctly wherever the product is packed without first	*Disclosure granularity* • Environmental impact data is easier to be understood in a B2C context at higher levels of abstraction • Would still require an exception for online retail, as with batch-level granularity *UPI granularity* • There is a lack of consensus among different actors in the supply chain on how significant the increase in costs associated with this granularity level is.

	matching a batch-specific label, supporting a “make-to-order” or “just-in-time” supply-chain model. • Improves inventory accuracy and streamlines supply-chain operations and traceability, tracking every product, even for traditional business models	

Source: elaborated from by TNO work and Cirpass-2, (2025)

The recommendation of a granularity level for each data point requires to understand current practices and the availability of data to balance the technical and economic implications of its collection and its intended use. While higher granularity levels describe products more accurately and precisely, these require higher ambition in the detailed mapping of each supply-chain step, which can be particularly demanding in long and fragmented networks as the textile sector.

As described in depth in section 5.2.3, stakeholders emphasised that current data practices are characterised by low granularity as they serve commercial, compliance, and operational needs, rather than the fine-grained traceability implied by some DPP use cases. Most actors currently manage product data at model level for external communication, reflecting how product information is typically consolidated, verified, and shared with downstream actors and consumers. The batch-level is also widely used across the textile value chain, mainly on internal operational practices such as transaction, production, quality testing, certification, and traceability data. In contrast, item-level is currently uncommon in industry practices, while interviewees generally considered it to be relevant for downstream use and feasible over time for a phased future implementation.

Some stakeholders, particularly within the luxury segment, indicated a preference for investing early in item-level identifier infrastructure so that each physical unit can be individually scanned and addressed while populating that identifier with batch-level data in the initial phase. This aligns with the Cirpass’ approach to decouple the physical and digital readiness investment (labelling, scanning, unique ID assignment) from the data collection investment (gathering item-specific information from suppliers), allowing the former to proceed on a shorter lead time while the latter catches up incrementally. The inheritance model supports exactly this architecture: for instance, an item-level identifier can be assigned and the corresponding DPP populated with inherited batch- or model-level data at the point of production, with item-specific data appended only when needed.

Taking all above into consideration, **Table 13** summarises the proposal of the appropriate granularity level for each data point. It needs to be interpreted based on the following definitions that further specify the granularity levels indicative descriptions in the Regulation:

— A ‘model’ refers to a version of a product of which all units share the same technical characteristics, pattern and construction, not necessarily requiring colour and size distinctions.

— A ‘batch’ refers to a subset of a specific model, composed of all products produced in a specific manufacturing plant at a specific moment in time and under the same conditions, using the same materials and processes. The materials though could come from different batches.

— An ‘item’ refers to a single unit of a model.

The level of granularity proposed for each data point is justified as follows:

— In the context of product identification, the level of granularity is assigned according to the nature of the data point: item-level for the unique product identifier, batch-level for the batch ID and model-level for the model ID. In the following lines, the batch and model identifiers appear as specifically relevant to enable verification of other disclosures pertinent to these specific granularities.

— Regarding product classification data points, ESPR, PEFCR product categories, and commodity codes remain consistent within a model. Consequently, there is no necessity for a finer level of granularity in these instances.

— When it comes to producer identification, a batch level is necessary as the manufacturing facility can differ within a model. Only having the exact facility identified would allow validating parameters related to carbon or environmental footprint calculations. Furthermore, a single model may be placed in the EU market by different importers, necessitating differentiation at batch level to provide precise information and identification.

— Fibre composition and component specifications depend on the model by design and should not fluctuate at higher levels of granularity.

— Similarly, garments are designed to comply with specific mechanical properties and robustness at the model level. Nevertheless, internal testing is conducted at the batch level by manufacturers to ensure compliance with desired quality criteria, facilitating problem identification in the manufacturing process and effective recall of defective products. Therefore, visual inspection, spirality, dimensional change, and conformity certification data points could be requested at the batch level, especially under self-declaration procedures. Challenges could arise if third-party certification is required, which would substantially increase costs, justifying consideration of a model level requirement, with internal quality assurances still managed at the batch level as per current industry practices.

— Chemical properties might vary significantly even within a batch due to the application of distinct dyes. For these, the minimum recommended level of granularity is batch level, while it should be ensured that all chemicals associated with all possible colours within that batch are included, reflecting a worst-case scenario.

— The recyclability score is determined solely by the garment's composition and should not vary within a model; hence, the model level would be the appropriate granularity for related data points.

— In terms of recycled and organic content data points, these are predetermined by model specifications, so that disclosure at that level may suffice. However, verification and associated data points should be conducted and disclosed at the batch level to ensure compliance, in line with current third-party certification practices available.

— The EU ecolabel is assigned at the model level according to corresponding regulation.

— Regarding environmental and carbon footprint, these can vary considerably depending on where the product is manufactured. Although these differences would only be observable at batch level, the analysis of current industrial practices highlighted the challenges regarding data collection for extended reporting. Because footprint indicators are intended to help consumers compare models and make informed purchasing decisions, this study proposes that such granularity be required as a baseline, with the possibility of moving to finer levels of detail in the future. This approach satisfies the consumer-oriented use case while limiting the burden on economic operators, who could use default values, averages or worst-case scenarios to fill data gaps. The rules for these calculations should be precisely defined in the delegated act to ensure harmonisation and comparability of the results.

— Finally, other data points within the manual and instructions section are expected to remain unchanged within a model; therefore, this would be the recommended granularity.

Based on the granularity defined for each data point, the minimum requirements for product-identification information are revised. For the implementation and verification of the rest of the data points, distinguishing products beyond the batch level is unnecessary; batch-level information is sufficient to meet the identified use cases. The proposal would be then to require batch identifiers as the minimum requirement, to be populated with batch or model information according to the granularity level assigned above to each of the data points.

Still, the economic operator could add data on a finer granularity than mandated on a voluntary basis, allowing flexibility and avoiding penalising frontrunners. This way, while the model-level has been identified as minimum required for certain data points, a batch data point could be voluntarily provided. In addition, it is currently under analysis the voluntary assignment of item-level identifiers, considering the implications for the technical architecture of the system and registry, market surveillance and consumers. The item-level DPP could then be populated with data at higher level of granularity, as well as with other item-specific data appended when wanted. Consistent with the inheritance model previously described, this approach would accommodate stakeholders who wish to invest early in item-level identifier infrastructure, separating the physical-digital investment from data collection and allowing the former to be implemented quickly while the latter is built up gradually.

As introduced in **Table 12**, requiring data at granularity levels other than model introduces complexity for online retail, as online marketplaces cannot guarantee that the consumer gets an item from the exact batch displayed. Under Regulation (EU) 2019/1020, in the context of e-commerce, a product is deemed to have been placed on the market[51] if the offer for sale is targeted at end users in the Union. At that point the ESPR obligations apply, and the economic operator must ensure that a DPP is available. However, Article 9(2)(e) further requires product-specific delegated acts to define how the information is made accessible to customers before they are bound by a contract. Consequently, the delegated act may allow the platform to display only the model-level data or a representative batch DPP during the online offer stage to satisfy the pre-purchase information requirement. Then, the complete data at the appropriate

[51] According to the Regulation (EU) 2019/1020, 'placing on the market' means the first making available of a product on the Union market.

granularity become available to the consumer—and to customs and market surveillance authorities—once the purchase has been ordered and a physical product has been assigned to it.

Table 13. Proposed level of granularity by data point.

Data Category	Data Field	Recommended Granularity Level
Identification & Classification	Unique Product ID*	Item
	Batch ID	Batch
	Model ID	Model
	ESPR and PEFCR product category	Model
	Commodity code	Model
Producer Identification	Unique operator identifier (manufacturer, importer, other)	Batch
	Operator name, address (manufacturer, importer, other)	Batch
	Operator contact (manufacturer, importer and other)	Batch
	Unique facility identifier	Batch
Product Information - Material	Fiber composition	Model
	Components specification	Model
Product Information - Mechanical properties	Robustness score	Model
	Visual inspection	Batch (self-declaration)/ Model (third-party certified)
	Spirality	Batch (self-declaration)/ Model (third-party certified)
	Dimensional change	Batch (self-declaration)/ Model (third-party certified)
	Conformity certification	Batch (self-declaration)/ Model (third-party certified)
Product Information - Chemical Properties	Substances of Concern (SoC)	Batch
	Location of the SoC	Batch
	Concentration of SoC	Batch
	Relevant instructions for the safe use	Batch
	Information relevant for disassembly, reuse, recycling and management at EoL	Batch
Product Information - Recyclability	Recyclability score	Model
	Conformity certification	Model
Product Information – Recycled content	Recycled content (%)	Model
	Type of waste	Batch
	Weight (excluding trims)	Batch
	Amount of recycled material	Model
	Conformity certification	Batch
Product Information – Other EU law	Organic content (%)*	Model
	Amount of organic material*	Model
	Conformity certification*	Batch
	EU Ecolabel*	Model
Product Information – Product footprint	Product carbon/environmental footprint – Class of performance	Model
	Product carbon/environmental footprint – Absolute value	Model
	Carbon footprint calculation parameters	Model
	Weight	Model
	Conformity declaration	Model
	Care instructions	Model
	Repair instructions*	Model
	Contact of repair services offered by brand*	Model

Product Information – Manuals and instructions	Warranty duration	Model

* Data point to be filled on a voluntary basis.

Source: own elaboration

9.2. Access rights

The ESPR establishes the principle that DPP information must be accessible free of charge to users within the scope of their respective access rights. Article 10(1)(a) requires that the DPP be made available and remain accessible throughout the product's life cycle. At the same time, the regulation allows for differentiated access to protect commercially sensitive information, with restricted fields accessible only to authorised users such as market surveillance authorities, customs authorities or other actors defined in the applicable delegated act. Together, these provisions ensure that consumers, public authorities and downstream economic operators can retrieve relevant DPP information without financial or technical barriers, while safeguarding confidentiality for sensitive data elements.

A role-based access model is therefore necessary to ensure that all actors can obtain the information needed for safety, circularity and traceability, while confidential business information remains protected. These access arrangements will need to be defined in the delegated act for textiles and implemented through the DPP Registry and Web Portal.

Three core categories of access can be distinguished to ensure that all actors receive the information required to perform their roles while protecting commercially sensitive information and enabling full regulatory oversight.:

- **Publicly accessible information**, available to any user without authentication.
- **Information accessible only to notified bodies, market surveillance authorities, customs and the European Commission,** including compliance documentation, test results and other information required for regulatory purposes.
- **Information accessible only to natural or legal persons with a legitimate interest[52],** such as recycling operators, covering fields such as detailed product composition.

9.2.1. Assessment of the access rights levels

Based on the use-case analysis conducted in section 6.1, the textiles DPP should prioritise public access for data that supports transparency, traceability, market functioning and end-of-life operations. However, the rights assessment should ensure that public access applies only to fields that are not subject to commercially sensitive information and confidentiality obligations.

The stakeholders' consultation revealed that suppliers manage technical data on fibre properties and chemical usage as Confidential Business Information (CBI), as they may allow other entities to

[52] In case of Battery Regulation, Art 77(9), the Commission needs to specify which persons are to be considered persons with a legitimate interest in the separate implementing act.

understand their cost structure and exert upon them undue pressure in price negotiations. Moreover, the calculation parameters behind the carbon/environmental footprint indicators, may indirectly reveal production process information, energy consumption or operational efficiencies that could also be considered commercially sensitive.

In addition, not all relevant data points hold significance for the consumer, who may feel overwhelmed and confused by an excess of information. Therefore, it is important to note that the public data points would vary from those that might appear on a prospective ESPR label, which would prioritise essential information. Furthermore, certain data points have been categorised under 'authority only' or 'legitimate access' when equivalent public data points exist that convey the same information more effectively. This links with the granularity levels recommended for each data point and the option to voluntarily go beyond the minimum required. From the perspective of the consumer at the point of sale, the product information to be disclosed as 'public' should always be at model level (except for the SoC), that is what they would be able to compare. Consequently, the organisation of data ensures that stakeholders receive the information most pertinent to their needs.

At the same time, regulators—including market surveillance authorities, customs authorities and the European Commission—must have full access to restricted data for enforcement purposes.

Table 14 summarises the recommended access-rights levels for each data field, aligning ESPR requirements with the specific sensitivities of the sector and needs of their actors. It provides a clear distinction between publicly accessible information and data restricted to actors with a legitimate interest or competent authorities.

Table 14. Proposed level of access rights by data point.

Data Category	Data Field	Recommended Access Level
Identification & Classification	Unique Product ID	Public
	Batch ID	Public
	Model ID	Public
	ESPR and PEFCR product category	Public
	Commodity code	Public
Producer Identification	Unique operator identifier (manufacturer, importer and other)	Public
	Operator name, address (manufacturer, importer and other)	Public
	Operator contact (manufacturer, importer and other)	Authority only
	Unique facility identifier	Public
Product Information - Material	Fiber composition	Public
	Components specification	Public
Product Information - Mechanical properties	Robustness score	Public
	Visual inspection	Public
	Spirality	Public
	Dimensional change	Public
	Conformity certification	Authority only
Product Information - Chemical Properties	Substances of Concern (SoC)	Public
	Location of the SoC	Legitimate interest
	Concentration of SoC	Public
	Relevant instructions for the safe use	Public
	Information relevant for disassembly, reuse, recycling and management at EoL	Legitimate interest
Product Information - Recyclability	Recyclability score	Public
	Conformity certification	Authority only

Product Information – Recycled content	Recycled content (%)	Public
	Type of waste	Public
	Weight (excluding trims)	Legitimate interest/ Authority only
	Amount of recycled material	Legitimate interest/ Authority only
	Conformity certification	Authority only
Product Information – Other EU law	Organic content (%)	Public
	Amount of organic material	Legitimate interest/ Authority only
	Conformity certification	Authority only
	EU Ecolabel	Public
Product Information – Product footprint	Product carbon/environmental footprint – Class of performance	Public
	Product carbon/environmental footprint – Absolute value	Legitimate interest/ Authority only
	Carbon footprint calculation parameters	Legitimate interest/ Authority only
	Weight	Public
	Conformity declaration	Authority only
Product Information – Manuals and instruc-tions	Care instructions	Public
	Repair instructions	Public
	Contact of repair services offered by brand	Public
	Warranty duration	Public

Source: own elaboration

9.2.2. Technical considerations (out of scope)

From a technical perspective, the DPP system is expected to operate through a central registry of unique identifiers, while the underlying product information will be stored in a decentralised manner by manufacturers, authorised representatives or other data holders. The central registry will establish the authentication, authorisation and access-rights protocols required for restricted data fields, while data retrieval will follow these centrally defined permissions.

The detailed protocols will be further specified through European standardisation, particularly by CEN/CENELEC JTC 24 WG4, which is developing the interoperability framework for identity management, authorisation, API-based[53] data exchange and auditability. Access rights may ultimately be enforced through the central registry and inherited by decentralised systems, or through authorisation tokens attached to queries requesting restricted information.

9.3. Data governance

Data governance for the DPP refers to the organisational and procedural arrangements that ensure the accuracy, completeness and continuity of information throughout a product's life cycle. In the context of textile apparel products, governance is particularly important because product information originates at several points along the long and fragmented value chain. This section sets out governance principles relevant for the content of the DPP as defined in the ESPR. The design of the technical DPP system infrastructure—such as APIs, authentication mechanisms,

[53] Data exchange done through Application Programming Interface (API) offering structured, programmable access to data.

registry architecture, interoperability protocols, etc.—is defined at horizontal level through future delegated acts and standardisation and therefore lies outside the scope of this study.

9.3.1. Roles and responsibilities

Under the ESPR, the economic operator placing a product on the EU market would be responsible for ensuring that the corresponding DPP is available, accurate, complete, and up to date and for uploading the unique identifier in the digital registry. As described in section 2.1.1, this includes EU-based **manufacturers** and **importers** when the former is stablished outside the Union. Authorised representatives, while performing specific tasks on behalf of the manufacturer, do not normally assume overall responsibility.

When multiple importers bring into the EU market the same product from a manufacturer established outside the Union, they are all independently required to ensure that:

- The manufacturer has carried out the appropriate conformity assessment.
- The manufacturer has drawn up the required technical documentation.
- A Digital Product Passport (DPP) is available and accurate.

Nevertheless, to avoid duplication, the upload of the DPP to the registry would be done only once. Because every product must be connected to a persistent unique identifier regardless of which importer brings it in, if the identifier is already registered, the registry's versioning and status functions could allow it to be updated or linked rather than duplicated.

Distributors make products available on the market after those products have been placed thereon by the manufacturer or importer. Their role consists in verifying the access to the DPP and the presence of information as required by the delegated act. **Second-hand sellers** belong to this category. Similarly, **fulfilment service providers** must verify access and presence of the information and are also responsible for maintaining it during handling.

As for **online marketplace providers**, they offer an intermediary service that allows customers to conclude distance contracts with other traders for the sale of products. Thus, they are not considered manufacturers, importers, or distributors unless:

- It sells products under its own name or trademark. Then, it is deemed a manufacturer.
- It purchases products to resell them to consumers. Then, it acts as a distributor.
- It offers warehousing, packaging, and dispatching services without owning the goods, it may qualify as a fulfilment service provider.

Otherwise, their roles are to ensure potential customers have access to the DPP, designing their online interfaces to enable traders to provide it, and verify the required data is provided.

When a downstream operator **further processes** a textile apparel product—such as through printing or embroidery —and places the transformed product on the EU market under their own name or trademark, they assume the responsibilities of the manufacturer for the purposes of the DPP. The upstream information must be inherited where it remains valid, while parameters that are modified by downstream processes must be newly declared, for instance new SoC, if added. Delegated acts and technical standards will need to define the rules for linking upstream and downstream DPPs, ensuring continuity of information across transformation steps.

Under the Battery Regulation, in case the processing relates to preparation for reuse, repurposing or remanufacturing, and the transformed product is placed on the market, the creation of a new battery passport is required, which must be linked to the passport(s) of the original battery. This approach ensures continuity of information along the transformation chain while also establishing clear accountability for the accuracy of the passport at each stage of market placement. If the governance principle under this Regulation is considered to offer a useful parallel for the ESPR context, the responsibility for the DPP would be transferred to the operator placing that repurposed or remanufactured garment on the market.

The delegated act and system level standards need to clearly indicate whether a new DPP must always be created and how upstream data should be linked or transferred. Clear governance rules will therefore be needed to determine:

— when responsibility for maintaining a DPP transfers from one actor to the next;

— how upstream DPPs are linked when products undergo further processing; and

— which data may be inherited from previous DPP entries, and which must be newly declared.

9.3.2. Data acquisition and update

The DPP system is fundamentally built on a decentralised model, where most product data is hosted by economic operators or their service providers, while the central registry acts as a secure record and lookup tool. The relationship between the central registry and the decentralised data points is carried out through the product unique identifiers that the economic operators placing the products in the market are required to register, this is the manufacturers (or importers if the manufacturer is outside the EU).

Given these operators are also responsible for ensuring data accuracy, update and completeness, the apparel delegated act may require that the obligation to create the decentralised system also lies with them. arrangement enables them to edit or update existing data to keep the information current, or to delete or deactivate data in line with the rules set out in the delegated act, including those on data retention and archiving[54]. The ESPR requires that the DPP remains available for at least ten years after the product has been placed on the market, unless the delegated act specifies otherwise.

According to this approach, when an importer brings a third-party manufacturer's product into the EU, the importer would then assume the duty of creating the DPP entry, but the required information must be obtained from the upstream supplier. Consequently, the importer would function as a custodian of data that it did not generate itself and must verify that the data and compliance documentation are accurate before entering them into the decentralised system. Should market-surveillance authorities later determine that the data are erroneous, liability is shared: the importer may be held accountable for a failure to exercise due diligence, while the original manufacturer remains responsible for providing false or misleading information. This dual responsibility would encourage both parties to implement robust data-exchange procedures and

[54] Although versioning and audit-trail requirements are not explicitly detailed in the Regulation, they should be defined either in the delegated act or in horizontal technical standards to support traceability and enable competent authorities to verify the evolution and accuracy of DPP information over time.

audit trails, thereby ensuring that the DPP reflects reliable information throughout the product's lifecycle.

When other economic operators place a product on the EU market under their own name or trademark, or when they modify the product, they assume the responsibility of generating the new information and updating the DPP as relevant. This may require that a new DPP is created with a link to the previous one, as the changes may not affect the whole model or batch but a single item, needing that the granularity level is modified. By keeping the link, the traceability and the connection to the original product information can be maintained.

In addition, MSAs may also use the DPP as a container of compliance information. For example, MSAs may update the DPP to log a surveillance event, annotate the results of the inspection with a compliance flag, or indicate the reason for withdrawal from the market. Moreover, customs controls may append their inspection reports on the DPP of imported products.

Article 9(3) further requires that DPP systems be designed so that information can be verified for compliance purposes, implying that the update and record-keeping mechanisms defined in future delegated acts must support traceability and verification.

9.3.3. Data storage

In line with what has been described in the previous section, in the ESPR framework, data storage follows a hybrid governance model combining the central EU registry with decentralised storage of substantive passport content. Only a limited set of reference information—primarily identifiers, metadata and essential registry-level fields—will be stored in the EU DPP Registry established under Article 13 of the Regulation. All remaining passport content will be hosted in the decentralised systems operated by economic operators or by service providers acting on their behalf. The decentralised storage avoids unnecessary replication of commercially sensitive information at EU level while ensuring that the central registry can serve as the authoritative point of reference for product identification.

When the economic operator is the manufacturer, the approach aligns with existing practices in the textiles sector, where technical documentation is typically stored in internal production and quality-management systems. Conversely, when the manufacturer is based outside the EU, the proposed model designates the importer as the party that creates the DPP and thus assumes responsibility for its storage.

The technical architecture of the system will be established through European standardisation and Commission implementation measures. In particular, CEN/CENELEC JTC 24 Working Group 4 is expected to set out horizontal system-level requirements relevant to all DPPs, including approaches to data exchange, system interoperability, archiving and persistence of data, and the application programming interfaces (APIs) that will support the lifecycle management and searchability of DPP information. The extent to which manufacturers will be required to maintain audit trails, monitor data changes or implement specific data-retention policies will depend on the rules defined in the relevant delegated act for textiles and the standards developed under JTC 24. Therefore, these system-level aspects remain outside the scope of the present study.

9.3.4. Data integrity and verification

Data integrity and verification are essential to ensure that the information contained in the DPP is reliable, traceable and suitable for compliance checks, both within the EU and along global textiles

supply chains. In the case of apparel, DPP data will originate from multiple sources, including upstream suppliers, internal production processes and conformity documentation. Ensuring the accuracy of this information requires a verification framework that is robust enough to support enforcement under the ESPR while also being feasible for operators embedded in complex, international value chains.

The ESPR sets out general obligations on data accuracy and verifiability, but the detailed verification requirements for each product group will be defined in the relevant delegated act. For textiles, three distinct categories of data can be expected, each requiring a different verification approach.

Firstly, data such as mechanical properties can be verified directly through tests or checks on the final products. The verification process primarily involves corroborating the documentation of these tests or check results.

Secondly, data such as recycled or organic content and environmental footprint require indirect verification and depend on calculation rules, system boundaries, allocation choices, and inputs from various supply chain actors. These need Chain of Custody (CoC) systems to be established to ensure integrity of data as they move through various stages, from origin to final destination. However, the ESPR exerts regulatory control only over suppliers placing products on the EU market, thus upstream data from non-EU suppliers might fall outside direct EU regulatory oversight. Verification processes for these data must include mechanisms that enable downstream operators to gather evidence from suppliers through contractual arrangements, recognised third-party assessments, or mutually accepted certification schemes.

Thirdly, data concerning product or operator identification pertain to ensuring the uniqueness and correctness of identifiers and other relevant information without necessitating validation through calculations or direct tests.

Ensuring data integrity and reliability is vital for customs controls, market surveillance, and downstream information flows. Future delegated acts and supporting technical standards are anticipated to clarify the exact mechanisms for its operationalisation, while more specific choices are beyond the scope of the present study.

10. Conclusions and points of attention

This preparatory study has identified a coherent set of data points that satisfy the ESPR information requirements for textile apparel products and fulfill the Digital Product Passport (DPP) use cases while remaining compatible with existing industry practices. By anchoring the DPP on well-established identifiers and on a tiered granularity approach, the proposed content framework balances regulatory compliance, consumer relevance and the administrative burden on economic operators.

A strict exclusion of voluntary sustainability or environmental indicators that are not defined in the preparatory study prevents green-washing and guarantees that only harmonised, methodologically sound metrics are displayed. The proposal suggests that voluntary entries are therefore limited to non-environmental information, for instance to support commercial transactions (e.g., logistical codes, payment terms, technical specifications).

Based on the analysis of legislative requirements, industry readiness and practices and use-case elicitation, the report identifies reference methodologies for the definition of the data points,

reviews common and existing vocabularies and provides recommendations regarding appropriate granularity levels, access rights and data governance.

The following conclusions and critical points of attention are identified:

- **Standardization and Semantic Interoperability:** The success of the DPP rests on a harmonised data ecosystem. To avoid fragmentation, the system must be based on international open standards. Reviewing existing common and sector-specific vocabularies in the textile industry ensures that data is machine-readable, searchable and transferable without reliance on any specific supplier.
- **Balanced Granularity:** While higher granularity (item-level) offers the most benefit for circular economy use cases like repair and individual tracking, it poses significant technical and economic burdens on producers. The study suggests a phased approach: implementing item-level identifiers (SGTIN or equivalent, compliant with prEN18219) on a voluntary basis to enable future scalability, while initially requiring populating the passport at model-level for most product characteristics and batch-level where variability is material and for accurate verification in order to maintain proportionality. However, the implications of allowing multi-level referencing needs to be further explored.
- **Access Rights and Data Protection:** To balance transparency with the protection of Confidential Business Information (CBI), a role-based access model is essential. While fiber composition and other data points directly related to the ESPR information requirements should be publicly accessible, sensitive data—such as detailed chemical concentration ranges or verification documentation—should be restricted to Market Surveillance Authorities or actors with a legitimate interest (e.g., recyclers).
- **Data Integrity and Verification:** The reliability of the DPP will depend on the veracity of information contained, which originates from long, opaque global supply chains. Establishing robust Chain of Custody (CoC) models and verifiable links between the physical product and the digital information is vital to ensure that data is relevant and trustworthy.
- **Digital Readiness and SME Support:** With 99% of the EU textile supply chain consisting of SMEs and micro-enterprises—many with minimal digital infrastructure—the implementation must focus on facilitating the transition. This could be done by minimizing the administrative burden by digitizing data already collected for commercial purposes and that are meaningful for their performance, as well as providing free, public dictionaries for compliance.
- **The Challenge of Multilingualism:** A critical point of attention is the requirement for information to be understandable and accessible to the intended recipients. The DPP must be available in all official EU languages. Multilingualism is essential to ensure that consumers, market surveillance authorities and other stakeholders can retrieve and interpret the information without language barriers. While the use of standardized ontologies and dictionaries can facilitate automated translation for technical attributes, descriptive and free-text fields will require manual or professional translation by the economic operator or a DPP service provider. The delegated act should describe translation requirements and how these would be operationalized, potentially including a central EU maintained multilingual dictionary and a certified translation process.

— **Future work:** The scope of this study is limited to defining and structuring the data to be included in the DPP. Topics such as the technical architecture of the DPP system, data carriers, data governance models, access-rights management, registry and web portal design, and the implementation of decentralised data storage—although essential for the full functioning of the DPP—should be subject of future work. Moreover, a cost-benefit analysis of the data points recommended in this report should follow, together with the development of new dictionaries to be specifically used within the ESPR framework to ensure they remain publicly and freely available during the period mandated for legal compliance and enforcement.

— **Stakeholder consultation:** broad stakeholder consultations should be performed to validate the content, assess implementation costs and refine the proposal before adoption.

By finalising these elements, the DPP will become a robust, user-friendly instrument that delivers reliable product information, supports market surveillance and facilitates the transition towards a more sustainable and circular textile sector.

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List of abbreviations

Abbreviations	Definitions
API	Application Programming Interface
AVR	Accredited Verification Regulation
BCI	Better Cotton Initiative
B2B	Business-to-Business
B2C	Business-to-consumers
CBI	Confidential Business Information
CCS	Content Claim Standard
CEN	European Committee for Standardisation
CENELEC (or CLC)	European Committee for Electrotechnical Standardisation
CEON	Circular Economy Ontology Network
CoC	Chain of Custody
CPDP	Circular Product Data Protocol
CSRD	Corporate Sustainability Reporting Directive
CS3D	Corporate Sustainability Due Diligence Directive
DA	Delegated Act
DPP	Digital Product Passport
DSI	DPP System Information
DoP	Declaration of Performance
DoPC	Declaration of Performance and Conformity
eSDS	Extended Safety Data Sheet
EAD	European Assessment Document
ECHA	European Chemicals Agency
ECVP	Environmental Claim Validation Procedure
EDC	European Data Connector
EDI	Electronic Data Interchange
EEA	European Economic Area
EN	European Norm (European Standard)
EoL	End of Life
EPD	Environmental Product Declaration
ERM	Enterprise Risk Management
ERP	Enterprise Resource Planning
ESAP	European Single Access Point
ESPR	Ecodesign for Sustainable Products Regulation

ETA	European Technical Assessment
EU	European Union
GHG	Greenhouse Gas
GLN	Global Location Number
GOTS	Global Organic Textile Standard
GPP	Green Public Procurement
GRS	Global Recycled Standard
GS1	Global Standards One
GTIN	Global Trade Item Number
HS	Harmonised System
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
IT	Information technology
IUPAC	International Union of Pure and Applied Chemistry
JRC	Joint Research Centre
JTC	Joint Technical Committee
LEI	Legal Entity Identifier
LCA	Life Cycle Assessment
MEErP	Methodology for the Ecodesign of Energy-related Products
MSA	Market Surveillance Authority
NFC	Near-Field Communication
QHSE	Quality, Health, Safety and Environment
QR	Quick response
PEF	Product Environmental Footprint
PEFCR	Product Environmental Footprint Category Rules
PEFCR A&F	Product Environmental Footprint Category Rules for apparel and footwear
PLM	Product Lifecycle Management
PPE	Personal protective equipment
PPI	Product and Producer Information
RCS	Recycled Claim Standard
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation
RFID	Radio-Frequency Identification
RSL	Restricted Substance List
SGTIN	Serialised Global Trade Item Number

SKU	Stock Keeping Unit
SMEs	Small and medium-sized enterprises
SoC	Substance of Concern
SVHC	Substances of Very High Concern
TARIC	Integrated Tariff of the European Union
TC	Technical Committee
TLR	Textile Labelling Regulation
UC	Use case
UFI	Unique Facility Identifier
UHF	Ultra High Frequency
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
UOI	Unique Operator Identifier
UPI	Unique Product Identifier
WCO	World Customs Organisation
WG	Working Group

Annex 1. Identified use cases

UC1. Automated completeness verification of DPP disclosures

Primary actor: DPP System (automated service, can be deployed by multiple actors)	**Secondary actors: none**
Scenario: Before a Digital Product Passport (DPP) can be finalized and made accessible, an automated validation check can be used ensure all required data fields—defined in the applicable delegated act—are present and correctly formatted. This validation helps prevent incomplete or non-compliant passports from entering the registry. It is important to note, however, that this only checks the presence and formatting of information, not its accuracy.	
Goal: Ensure that each DPP contains all mandatory information before it is accepted into the registry or shared with stakeholders.	**Trigger:** A manufacturer submits or updates a DPP for a product.
Actions	
1. Customs Authorities receive a shipment manifest, including a list of unique product identifiers and commodity codes related to imported products. 2. Customs officers check the physical product or associated documentation for a DPP data carrier, and access the associated data. This process can be automated as well. 3. Customs officers input these identifiers into the EU Registry to verify if the data matches the registry records (Art. 15 of ESPR). 4. If a mismatch or absence is found, customs may hold the shipment for further investigation or deny entry. 5. Use case ends.	
Data Required	**Data update events**
All mandatory DPP information, potentially includes the list below: ▪ Product identifier ▪ Importer identification ▪ Origin of the Product ▪ Fiber composition ▪ Robustness score ▪ Recyclability score ▪ Amount and type of recycled content ▪ Amount of organic material ▪ Substances of concern ▪ Environmental Footprint	(Optional) The validation results can (also) be appended to the product's DPP.

UC2. Customs controls for imported products

Primary actor: **Customs Authorities (and officers)**	**Secondary actors: none**
Scenario: When a product enters the EU from outside its jurisdiction, customs authorities verify that a Digital Product Passport (DPP) is present and corresponds with the official EU DPP Registry. This helps enforce Article 15 of the ESPR regarding market access requirements.	

Goal: Confirm that imported products carry a valid DPP that matches registry records before allowing market entry.	**Trigger:** Product is imported from outside of the jurisdiction of the EU
Actions	
1. Customs Authorities receive a shipment manifest, including a list of unique product identifiers and commodity codes related to imported products. 2. Customs officers check the physical product or associated documentation for a DPP data carrier, and access the associated data. This process can be automated as well. 3. Customs officers input these identifiers into the EU Registry to verify if the data matches the registry records (Art. 15 of ESPR). 4. If a mismatch or absence is found, customs may hold the shipment for further investigation or deny entry. 5. Use case ends.	
Data Required	**Data update events**
All mandatory DPP information, potentially includes the list below: ▪ Product identifier ▪ Origin of the Product ▪ Fiber composition ▪ Manufacturer and importer identification ▪ Product weight and packaging ▪ Robustness score ▪ Recyclability score ▪ Amount and type of recycled content ▪ Amount of organic material ▪ Substances of concern ▪ Environmental Footprint	(Optional) The customs inspection report may be appended to the DPP.

UC3. Ongoing compliance monitoring by Market Surveillance Authorities

Primary actor: **National Market Surveillance Authorities (MSAs) (and officers)**	**Secondary actors: none**
Scenario: MSAs continuously monitor products on the EU market to ensure ongoing compliance with sustainability and safety regulations. They can use the EU DPP Web Portal and Registry to retrieve DPP data for products and assess alignment with legal and technical standards.	
Goal: Detect and address non-compliance of products circulating on the EU market.	**Trigger:** A product is selected for routine or risk-based market surveillance.
Actions	
1. MSA selects products for inspection, for instance based on risk profiles, reports, random sampling, request, or regulatory requirements. 2. MSA retrieves relevant DPPs from the Web Portal or the Registry using product identifiers. 3. MSA checks for required elements such as certification, labelling, and testing procedures. 4. Optionally, MSA checks the validity of the attached digital certificates.	

5. MSA may request documentation, perform lab testing, or flag the product for corrective action where DPP data is missing, incorrect, or indicates non-compliance. 6. Use case ends.

Data Required	**Data update events**
All mandatory DPP information and data points that allow their calculation, potentially includes the list below: ▪ Product identifier ▪ Origin of the Product ▪ Fiber composition ▪ Manufacturer identification ▪ Importer identification, if applicable ▪ Product weight and packaging ▪ Robustness test results ▪ Robustness score ▪ Recyclability score ▪ Amount and type of recycled content ▪ Amount of organic material ▪ Substances of concern ▪ Environmental Footprint	(Optional) MSA may append results of its inspection to the DPP.

UC4. Statistical monitoring of apparel imports and production

Primary actor: **National Market Surveillance Authorities (MSAs) and relevant actors in the European Commission**	**Secondary actors: manufacturers, importers, recyclers**
Scenario: MSAs need consistent and timely statistical data regarding imports, production volumes etc. of textile apparel products to identify and manage trends in the market, and manage their reporting obligations. Traditionally, this can require resource-intensive efforts. With the DPP registry, they can access the data collected from DPPs to identify such trends and identify relevant information for their reporting obligations.	
Goal: Improve efficiency in the collection of statistical data on textile apparel production and import through the utilization of Digital Product Passports.	**Trigger:** Regular reporting cycle or compliance check initiated by the MSA. (Can be continuous)
Actions	
1. MSA initiates statistical data collection on textile apparel and imports for regulatory reporting or market analysis. 2. MSA accesses the DPP database or registry, filtering data based on predefined parameters (e.g., textiles product categories, place of origin, etc). 3. MSA extracts aggregated data, including import volumes, production metrics, recycled content, and carbon footprints, etc. 4. MSA verifies data integrity through cross-checking linked product passports. 5. MSA compiles statistical reports, significantly reducing manual validation and analysis. 6. MSA publishes or shares accurate statistical data with relevant stakeholders for informed decision-making and policy enforcement. Optionally, live dashboards can be created as well. 7. Use-case ends.	
Data Required	**Data update events**

All mandatory DPP information and data points that allow their calculation, potentially includes the list below: ▪ Origin of the Product ▪ Product categorisation and identification ▪ Manufacturer identification ▪ Importer identification, if relevant ▪ Fiber composition ▪ Product weight and packaging ▪ Robustness test results ▪ Robustness score ▪ Recyclability score ▪ Amount and type of recycled content ▪ Amount of organic material ▪ Substances of concern ▪ Environmental Footprint	None

UC5. Statistical monitoring for the identification of fast fashion models

Primary actor: **Statistical organism and relevant actors in the European Commission**	**Secondary actors: manufacturers, importers, recyclers**
Scenario: There is a need of reliable, up-to-date information to monitor fast-fashion dynamics across the EU market. At the moment, there is even lack of objective metrics to define and detect (ultra-)fast-fashion models.	
Goal: Generate objective metrics that can serve to detect (ultra-)fast-fashion models.	**Trigger:** Regular statistical reporting cycles (either at the moment of placing on the market or at the end-of-life), or the detection of a sudden surge in newly registered model identifiers for a given producer.
Actions	
1. The statistical organism queries for relevant DPP data, such as the model identifiers linked to each economic operator within the reporting period or, when a recycler provides a recycling-facility processing date for a discarded product, the model identifier, manufacturing date and economic-operator ID (the DPP web portal could be used for extracting the relevant information). 2. Metrics are calculated, for instance, the width of product range (count of distinct model identifiers per operator) or the garment lifetime (difference between recycling-facility processing date and manufacturing date). 3. Results are communicated to policy-makers and used to define thresholds that flag ultra-fast-fashion behaviour or to compare them with predefined ones. 4. Operators exceeding the thresholds are identified for further analysis and possible policy action (e.g., adjusted EPR fees). 5. Use-case ends.	
Data Required	**Data update events**
All mandatory DPP information that allows the calculation of metrics linked to (ultra-)fast-fashion models, potentially including the list below: ▪ Manufacturer identification ▪ Importer identification, if relevant ▪ Date of manufacturing	None

▪ Product and model identifiers	

UC6. Public procurement sustainability verification

Primary actor: **Contracting authority**	**Secondary actors: Tender applicant**
Scenario: During a public procurement process, a contracting authority evaluates product offers submitted by tenderers. To ensure alignment with Green Public Procurement (GPP) criteria, the authority accesses the DPPs linked to the proposed products. These passports provide reliable data on sustainability and materials to support informed and criteria-based decisions.	
Goal: Verify that products offered in tenders meet environmental criteria before awarding a contract	**Trigger:** Evaluation phase begins in a public procurement process
Actions	
1. Tendering company submits their proposal including product DPPs. 2. Contracting authority accesses the DPPs via links or QR codes. 3. DPPs present verified data on e.g. material composition, environmental footprint, and recycling potential. 4. Authority evaluates whether products comply with ecodesign requirements. 5. Authority evaluates whether each product meets the defined GPP criteria. 6. Evaluation findings are documented and incorporated into award decision. 7. Use-case ends	
Data Required	**Data update events**
All mandatory DPP information and data points that allow their calculation, potentially includes the list below: ▪ Origin of the Product ▪ Product categorisation and identification ▪ Manufacturer identification ▪ Fiber composition ▪ Product weight and packaging ▪ Robustness test results ▪ Robustness score ▪ Recyclability score ▪ Amount and type of recycled content ▪ Amount of organic material ▪ Substances of concern ▪ Environmental Footprint	None

UC7. Inform purchasing for more sustainable consumer purchase decisions

Primary actor: **Consumer (retail shopper)**	**Secondary actors: retailer or second-hand seller**
Scenario: Consumer seeks to make a sustainable purchasing choice, yet facing challenges due to a lack of immediate access to detailed product information. This information is crucial not only in the first-hand market but also in the second-hand market, where the credibility of pre-owned garments significantly influences consumer trust and promotes reuse.	
Goal: Make more conscious decisions when making a purchase	**Trigger:** Consumer finds a product in a store they would like to check the sustainability impact of.
Actions	
1. Consumer scans the DPP Data Carrier. 2. The DPP opens on their smartphone, displaying information related to their composition, robustness, recyclability, recycled content, and/or environmental impact. 3. Optionally, the consumer's DPP app filters out the relevant information from the DPP based on their pre-set preferences. 4. Optionally, the consumer checks data regarding any guarantees offered by the textile manufacturer, to identify much use they can expect out of the same. 5. Optionally, the consumer checks DPP data from different items and compares. 6. Consumer decides not to purchase or is reassured and does purchase responsibly. 7. Use case ends.	
Data Required	**Data update events**
▪ Origin of the Product ▪ Fiber composition ▪ Product Guaranteed Lifetime ▪ Robustness score ▪ Recyclability score ▪ Amount of recycled content ▪ Amount of organic material ▪ Substances of concern ▪ Environmental Footprint	None

UC8. Maintaining apparel appropriately

Primary actor: **Consumer**	**Secondary actors: Independent operator (Repairer, Tailor), Laundry and dry-cleaning operations**
Scenario: A consumer purchases a shirt first or second hand. On a first-hand purchase, over time, the shirt loses its label. In either case, once the label is lost, it becomes difficult for the consumer to find its care instructions. Access to data via the DPP helps them find the care instructions.	

Goal: Maintaining an apparel item in line with the stated care instructions	**Trigger:** Consumer would like to maintain a garment, but the care label is lost.
Actions	
1. Consumer needs to maintain a garment, but the physical care label is missing or unreadable. 2. Consumer scans the DPP Data Carrier on the garment. 3. The DPP opens on their smartphone, providing access to the product's digital information. 4. Consumer navigates to the care instructions section within the DPP interface. 5. Care instructions are displayed, including recommended washing, drying, ironing, and storage methods. 6. Consumer follows the digital care instructions, ensuring proper maintenance of the garment. 7. Use case ends.	
Data Required	**Data update events**
▪ Care instructions	None

UC9. Self-repair of worn apparel

Primary actor: **Consumer**	**Secondary actors: None**
Scenario: A user notices an apparel item is damaged (e.g. a seam has come undone on their hoodie or a zipper no longer functions). With access to the DPP, the user may consider repairing it themselves instead of discarding or considering sending it to a repair shop.	
Goal: Extend the lifespan of apparel by self-repairing a damaged apparel	**Trigger:** Consumer finds an apparel item is damaged and considers repairing it.
Actions	
1. Consumer inspects the damage. 2. Consumer scans a QR code or accesses the product's DPP using a smartphone. 3. Consumer is provided with detailed information about the product, including the repair diagrams, links to tutorial videos or manuals and information on the specific components required. 4. Consumer decides whether to repair it based on the complexity to perform the repair and the expected lifetime of the product (the consumer may decide not to repair if close to the estimated EoL). 5. Consumer orders a compatible component, if replacement is needed. 6. Consumer follows step-by-step guidance to perform the repair. 7. Use case ends.	

Data Required	Data update events
▪ Product component specification ▪ Product guaranteed lifetime ▪ Repair instructions	None*

* After repairs are completed, the consumer could update the DPP with details of the repair actions taken, offering feedback to the manufacturer for identifying recurrent component issues or updating the expected lifetime of the repaired product. However, allowing consumers to update this information could be problematic, as they may not possess the professional skills to correctly input data in accordance with established standards. Additionally, consumer repairs tend to be quite basic and do not warrant the burdens placed on both the consumers and the systems that would facilitate such data governance.

UC10. Finding repair services

Primary actor: **Consumer**	**Secondary actors: Independent operator (Repairer, Tailor)**
Scenario: A customer finds that a piece of clothing is damaged and considers repairing or replacing it. Independent repair services are often local and small-scale, making it impractical for brands to provide information about them, as they cannot predict the garment's usage location. DPP can serve to provide information on repair services offered directly by the garment's brand, minimising effort and burdens on manufacturers while still offering solutions to citizens.	
Goal: Encourage sustainable practices by making garment repair services more accessible, thus promoting repair over the discarding and replacing of apparel.	**Trigger:** Consumer finds a garment that is damaged and considers whether to discard it or get it repaired.
Actions	
1. Consumer inspects garment and opens DPP. 2. Consumer checks the expected lifetime data provided in the DPP and finds that the product has a significant lifespan left, despite the damage. 3. Consumer accesses the contact and details of repair services provided by the brand, if any. 4. Consumer takes the garment to the repair service provider. 5. Use case ends.	
Data Required	**Data update events**
▪ Product guaranteed lifetime ▪ Information regarding repair services offered by the brand	None

UC11. B2B data exchange for second-market resale

Primary actor: **Second-hand Seller**	**Secondary actors: Apparel Manufacturer**

Scenario: As part of the growing second-hand market, apparel manufacturers aim to support second-hand sellers by providing verified records of product characteristics and material composition. Traditionally, second-hand sellers have limited access to detailed product information, which can affect market trust and sales.	
Goal: Facilitate the resale of apparel in the second-hand market by enabling manufacturers to provide second-hand sellers with comprehensive, verifiable product data through the DPP.	**Trigger:** Second-hand seller acquires apparel items for resale.
Actions	
1. The apparel manufacturer generates a comprehensive DPP for each product, detailing characteristics, material composition, manufacturing details, and sustainability metrics. 2. Second-hand seller acquires a product to be sold. 3. Second-hand seller accesses DPP through a QR code or link. 4. The seller uses the information from the DPP to verify product details and material composition before listing it on resale platforms, ensuring accurate representation and enhancing buyer trust. 5. Sellers may update the DPP to reflect changes in ownership or condition as products are resold, ensuring information remains current and accurate. 6. Detailed and verified information increases confidence and trust among sellers and buyers, facilitating smooth transactions in the second-hand market. 7. Use-case ends	
Data Required	**Data update events**
All mandatory DPP information and data points that allow their calculation, potentially includes the list below: ▪ Origin of the Product ▪ Product categorisation and identification ▪ Product composition ▪ Product weight ▪ Robustness test results ▪ Robustness score ▪ Recyclability score ▪ Amount and type of recycled content ▪ Substances of concern ▪ Environmental Footprint	None*

* Sellers may update the DPP to reflect changes in ownership or condition as products are resold, ensuring information remains current and accurate. However, this use case would not pay off for the implementation of an item-level granularity that would allow for this update.

UC12. B2B data exchange to facilitate repair actions

Primary actor: **Repair Service Provider**	**Secondary actors: Apparel Manufacturer**
Scenario: While repair service providers are proficient in fixing garments, they often encounter barriers in sourcing identical components such as specific buttons or zips that match the original design. Standard components are readily available; however, finding exact matches is crucial for preserving the garment's aesthetic, which is paramount in the fashion industry.	

Goal: Enable repair service providers to source and replace specific garment components efficiently, ensuring high-quality repairs that maintain the original aesthetic integrity of the apparel.	**Trigger:** Repair service provider receives a garment in need of repair.
Actions	
1. The apparel manufacturer (or importer, if the manufacturer is stablished outside the EU) details model numbers and specifications of unique components (like buttons and zips) in the DPP, prioritizing on those relevant based on common failure modes and frequencies. 2. Repair provider receives a product to be repaired. 3. The repair provider accesses the DPP via a QR code or direct data link, obtaining detailed information on the specific components required. 4. Based on the information provided, the repair provider sources the exact components needed to ensure compatibility, preserving the garment's original aesthetic. 5. The provider performs the repair using the exact components and follows any manufacturer-recommended procedures (if any) to maintain quality and appearance. 6. After repairs are completed, the provider can update the DPP with details of the repair actions taken, offering feedback to the manufacturer for identifying recurrent component issues or updating the expected lifetime of the repaired product. 7. Use-case ends	
Data Required	**Data update events**
▪ Specific component details and model numbers (e.g., button size and design, zip style)	None*

* After repairs are completed, the provider can update the DPP with details of the repair actions taken, offering feedback to the manufacturer for identifying recurrent component issues or updating the expected lifetime of the repaired product. However, this use case would not pay off for the implementation of an item-level granularity that would allow for this update.

UC13. Data exchange to facilitate sorting

Primary actor: End-of-Life textile sorter	**Secondary actors: Recycling Facility**
Scenario: At the end-of-life stage, operator efficiency in sorting textiles for reuse and recycling is hampered by fragmented or unavailable information on material composition, hazardous substances, and non-recyclable fibres. Current practices involve labour-intensive human inspection for reuse and automated techniques for recycling, both of which face significant limitations in accuracy and efficiency. The DPP makes this information easily accessible, as long as the data carrier is available.	
Goal: Utilise the DPP to enhance the retrieval of comprehensive and accurate data, thereby enabling effective sorting for reuse, increasing value and consumer demand, and improving the separation of fibres for high-quality recycling output.	**Trigger:** An end-of-life textile operator initiates sorting procedures upon receiving a batch of garments.
Actions	

1. Operator scans each product's DPP identifier as it enters the sorting line, either manually using a handheld scanner or via automated vision systems.

2. Sorter retrieves data from the DPP, including material composition, hazardous components, and valuable elements.

3. Sorter categorizes the product based on this data.

4. Sorter then executes the sorting.

5. Sorter logs each decision and DPP scan, enabling ongoing process analysis and reporting, and informing potential upstream feedback to improve data quality.

6. Recycler accesses the information to optimise fibre processing and achieve high-quality output.

7. Use-case ends.

Data Required	**Data update events**
• Product composition and purity • Substances of concern	None

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