

DIGITAL PRODUCT PASSPORT

TRANSPARENCY, TRACEABILITY, AND CIRCULAR ECONOMY

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Introduction

The purpose of this document is to provide you with a necessary overview of the upcoming Digital Product Passport requirements set to be implemented by the European Union.

Digital Product Passports (DPP) are set to play a crucial role in the European Union's commitment to a circular economy. These electronic records provide detailed product information throughout their lifecycle, from production to disposal. The initiative aligns with the EU's environmental goals under the European Green Deal, aiming to enhance sustainability, facilitate recycling, and empower consumers with knowledge to make eco-friendly choices.

The DPP mandates that products carry unique digital identifiers, accessible through QR codes or similar technologies. This ensures transparency and traceability, offering insights into materials, recycling instructions, and environmental impacts. It applies to all products marketed in the EU, influencing global manufacturers by setting compliance standards that integrate into international supply chains.

As the EU rolls out DPPs across various sectors, starting with electronics and textiles, this whitepaper explores the strategic importance of DPPs in achieving the EU's 2030 sustainability targets and fostering a global shift towards sustainable practices.



| The Backdrop of the EU Green Deal

The European Green Deal is the European Union's ambitious action plan to transition to a clean, circular economy, restore biodiversity, and cut pollution to achieve climate neutrality by 2050. It outlines policies and initiatives across all sectors of the economy—including energy, agriculture, transportation, and manufacturing—to reduce greenhouse gas emissions and enhance environmental sustainability.

Key components of the Green Deal include increasing the EU's climate targets for 2030, boosting the efficiency and sustainability of resource use, and ensuring that economic growth is decoupled from resource use. This extensive strategy also emphasizes the need for innovation in technology, sustainable infrastructure, and financing mechanisms to support the green transition.

The Deal not only aims to make Europe the first climate-neutral continent but also seeks to ensure a just transition, where economic benefits are fairly distributed, and no individuals or regions are left behind. As part of its comprehensive approach, the Green Deal sets the stage for transformative legislative changes that influence both domestic and global environmental policies. This initiative represents the EU's commitment to leading the global environmental space and setting an example for sustainable development. As the Green Deal has a phased approach, one of the phases is the implementation of Digital Product Passports, so a full insight into the manufacturing and supply line can be achieved. The idea is to move away from non-sustainable products and influence the entire supply chain worldwide to shift towards sustainable development.



Understanding Digital Product Passports (DPP)

A Digital Product Passport (DPP) is an innovative tool integral to advancing the European Union's sustainability goals under the Circular Economy Action Plan. It is designed as a comprehensive digital record that accompanies a product throughout its lifecycle, from production to end-of-life. This passport facilitates the transition to a circular economy by making detailed product information universally accessible and standardized.

The DPP provides transparency by housing essential data in a digital format, such as the product's origin, composition, usage instructions, and recyclability. Each product is assigned a unique identifier, typically accessible via a QR code. This enables various stakeholders—manufacturers, consumers, and recyclers—to access up-to-date information about the product, supporting informed decisions about use, maintenance, disposal, and recycling.

Central to the DPP's role is enhancing product traceability and accountability in the supply chain, promoting sustainable practices, and helping consumers make eco-friendly choices. The DPP initiative represents a significant step toward embedding sustainability into the lifecycle of products marketed within the EU, setting a precedent for global environmental responsibility.



Timeline for the Implementation of Digital Product Passports (DPPs)

2021-2023: Development and Initial Testing

- The European Union outlined the framework for Digital Product Passports as part of the broader European Green Deal and Circular Economy Action Plan. During this period, the conceptual groundwork is laid out, including defining the technical specifications and data requirements for DPPs. Initial testing and pilot programs were launched to assess the feasibility and iron out any implementation challenges.

2023-2025: Implementation in Key Sectors

- The EU begins rolling out DPPs in high-impact sectors such as electronics and batteries. This phase involves integrating DPP requirements into existing manufacturing and product lifecycle management processes. Companies are required to start adapting their systems to incorporate DPP functionalities, such as generating unique digital identifiers and ensuring that all necessary product information is digitally recorded and accessible.

2025-2027: Expansion and Refinement

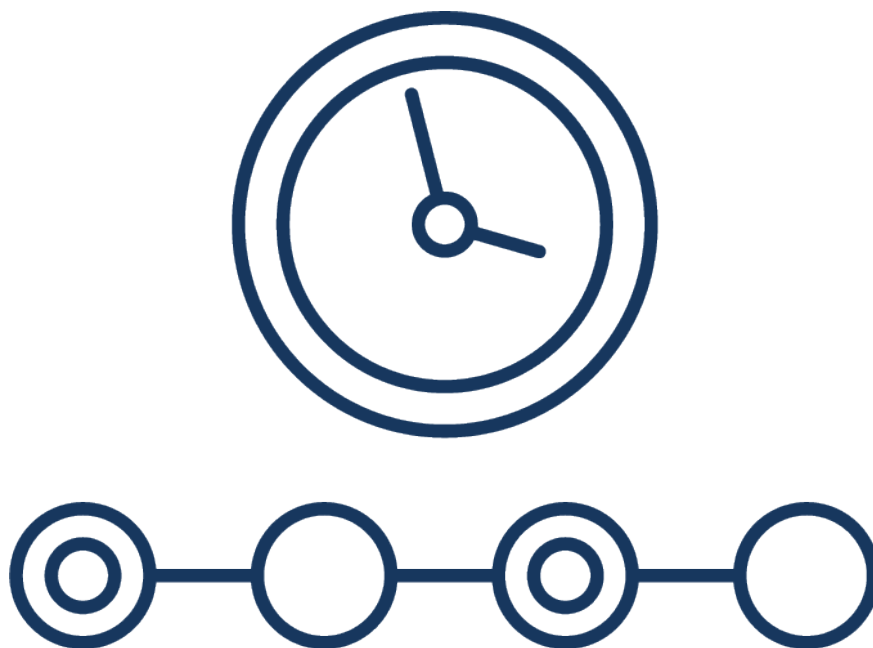
- The implementation of DPPs is expanded to additional sectors including textiles and automotive. Feedback from the initial rollout phases is used to refine the processes and technology behind DPPs. This period also sees an increase in regulatory activities, with a focus on ensuring compliance and enhancing the interoperability of DPP systems across different markets and sectors.

2025-2027: Expansion and Refinement

- By the end of the decade, DPPs are expected to be fully integrated across all relevant product categories within the EU market. The successful implementation within the EU sets a global precedent, encouraging other countries to adopt similar measures. International collaboration might also begin to standardize DPPs globally, facilitating international trade and global supply chain sustainability efforts.

Post-2030: Continuous Improvement and Global Standards

- By the end of the decade, DPPs are expected to be fully integrated across all relevant product categories within the EU market. The successful implementation within the EU sets a global precedent, encouraging other countries to adopt similar measures. International collaboration might also begin to standardize DPPs globally, facilitating international trade and global supply chain sustainability efforts.



Purpose and Functionality of Digital Product Passports (DPPs)

The primary function of a DPP is to store and provide easy access to detailed information about a product. This information encompasses manufacturing details, compliance documentation required by EU regulations, user manuals, and data related to the product's environmental impact and sustainability. Such detailed recording aims to support the EU's broader objectives of reducing environmental footprints, promoting recycling, and ensuring that products are designed to be more durable and maintainable.

The DPP initiative is not just about compliance; it's about shifting market dynamics towards transparency. By making detailed product information accessible, DPPs empower consumers to make informed purchasing decisions based on sustainability criteria and lifecycle considerations. Moreover, they facilitate manufacturers, recyclers, and waste handlers to align their operations with circular economy principles, such as extending the life of products through repair and proper end-of-life handling.

In essence, DPPs are a digital bridge connecting the economic activities of producing and using goods with the environmental imperative of conserving resources and minimizing waste. This integration of comprehensive product information into a single, accessible platform reflects the EU's commitment to leading the transition to a sustainable, circular economy.



Data Accessibility in Digital Product Passports (DPPs)

Data accessibility is a key component of the Digital Product Passport (DPP) framework, designed to enhance the enforcement of ecodesign requirements and adherence to environmental standards across the European Union. The regulation outlines who can access various types of data within the DPP, ensuring that information is available to the right stakeholders at the right time.

The structured accessibility is aimed to foster transparency and accountability throughout the product lifecycle. Manufacturers, consumers, regulators, and recyclers each have tailored access rights to data that is relevant to their specific needs and responsibilities:

1. **Manufacturers** are able to input detailed product information including materials used, production processes, and sustainability practices. This information serves not only to comply with regulatory requirements but also to demonstrate commitment to environmental standards.
2. **Consumers** gain access to essential information about the product's environmental impact, usage instructions, and end-of-life disposal guidance. This empowers consumers to make informed choices based on sustainability factors and provides guidance on how to extend the product's lifespan through proper care and maintenance.
3. **Regulators** have comprehensive access to verify compliance with ecodesign and other environmental regulations. This includes detailed tracking of a product's environmental footprint and other compliance data, which are critical for monitoring and enforcement activities.
4. **Recyclers** and waste management entities can retrieve specific information about the materials and components used in the products, facilitating more effective and efficient recycling processes. This data accessibility helps in identifying the most appropriate recycling strategies and technologies to be applied, enhancing the overall efficiency of recycling operations.

Technical Foundation: How do DPPs work?

Digital Product Passports (DPPs) integrate comprehensive data from the initial supply chain stages, including ingredient and material tracking, into the manufacturing data records. Each product, or a specified batch, is assigned a DPP at the manufacturing stage, initiating a continuous update mechanism that persists throughout the product's lifecycle.

Technical Infrastructure for DPP Implementation

To effectively implement DPPs, a robust technical infrastructure is necessary. This includes advanced digital traceability systems that are essential for deploying DPPs on an enterprise level. Every component and material within the product is allocated a unique digital identity (UID), which is pivotal for tracking throughout the product's journey in the supply chain.

Operationalizing DPPs

During the manufacturing process, each product is marked with a unique alphanumeric identifier. More commonly linked to a QR code or occasionally an RFID tag, this identifier ensures each product's DPP is continuously linked to updated data. The DPP platform thus facilitates varied access to this data, catering to different stakeholders in the ecosystem, such as logistics personnel, consumer-facing employees, government agencies, and recycling operatives. This system allows for tailored data access, enhancing operational efficiency and compliance across multiple facets of product handling and management.

This structured approach ensures that the DPP remains a dynamic and vital tool for managing product information transparently and efficiently from production to end-of-life, supporting the overarching goals of sustainability and regulatory compliance. This indicates that a platform or a set of tools will be made available to businesses to ensure they can comply with the DPP requirements effectively.

Governance and Management of Digital Product Passports

The management of Digital Product Passports (DPPs) will involve a structured governance framework that will outline clear protocols for data updates and access control. This framework will ensure that the integrity and security of the data are maintained throughout the product lifecycle.

Data Management:

The governance model will specify the processes through which data within a DPP can be updated. This will include identifying the types of data that can be updated, the circumstances under which these updates will occur, and the technologies used to ensure these updates are carried out securely.

Access Control:

Control over who can access or modify the data in a DPP will be a critical component of its governance. Access rights will be strictly defined based on the role and necessity of the stakeholders involved. This will include manufacturers who will need to update product specifications, regulatory bodies overseeing compliance, or recyclers who require information about material composition.

Authority and Responsibility:

The DPP system will assign specific responsibilities to designated authorities to oversee the management and compliance of the DPP data. These responsibilities will ensure that all interactions with the DPP are logged and audited, providing a clear trail of accountability.

This governance structure will support the effective and secure use of DPPs, safeguarding the data against unauthorized access and modifications while ensuring it remains a reliable resource for all users throughout the product's lifecycle.

Examples of Data Included in Digital Product Passports (DPPs)

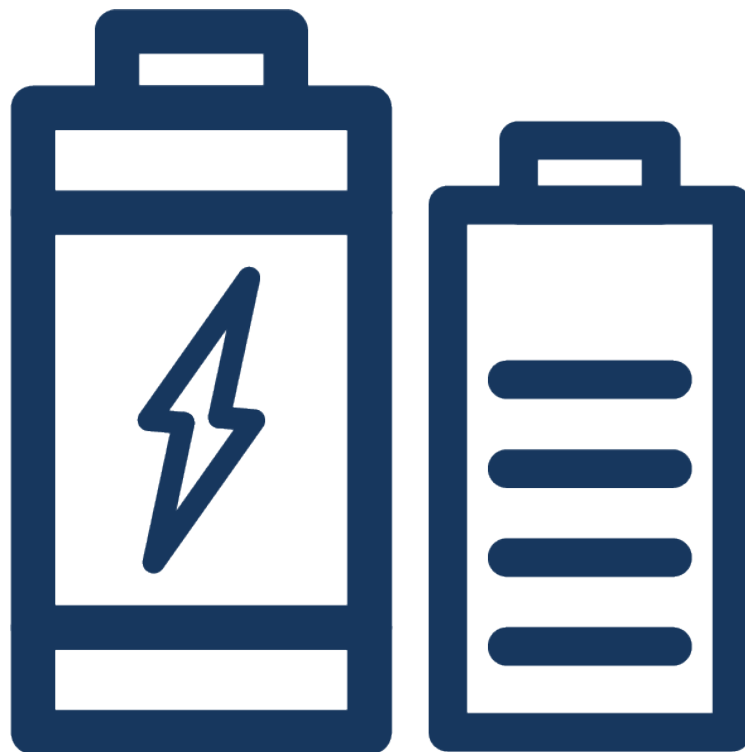
For Clothes:

1. **Material Composition:** Details about the types of fabrics used and any treatments or dyes applied to the materials.
2. **Source of Materials:** Information about where the materials were sourced, including the sustainability and ethical standards of the suppliers.
3. **Care Instructions:** Specific care instructions to prolong the life of the garment and ensure it is maintained in an environmentally friendly manner.
4. **Manufacturing Process:** Insights into the manufacturing process, including the location of factories and their environmental compliance records.
5. **Recyclability:** Information on how the garment can be recycled, including which parts of the clothing need to be separated for recycling processes.



For Batteries:

1. **Chemical Composition:** Detailed chemical makeup of the battery, including any hazardous materials used.
2. **Energy Efficiency:** Information about the battery's energy capacity and efficiency ratings.
3. **Production Date and Place:** Details on when and where the battery was manufactured, providing traceability.
4. **Usage Instructions:** Guidelines on how to safely use and store the battery to maximize lifespan and safety.
5. **End-of-Life Handling:** Directions for proper disposal or recycling of the battery, including how to handle it to avoid environmental damage.



| 12 Steps to Compliance

1. **Understand the Initiative:** Familiarize yourself with the EU Digital Product Passport (DPP) as part of the European Green Deal and its role in promoting a circular economy.
2. **Assess Applicability:** Determine if your products fall under the categories that will require a DPP, such as apparel, batteries, and consumer electronics.
3. **Standardize Data Collection:** Ensure that your data collection and recording methods are standardized across the company to align with DPP requirements.
4. **Obtain GTIN:** Plan for user and consumer product interaction by implementing a Digital Link solution. If necessary, start by obtaining a global trade item number (GTIN).
5. **Apply the Digital Link solution to Products:** Add Digital Links directly to the actual products rather than just the outer packaging or hang tags.
6. **Educate Your Workforce:** Train your employees on DPP systems and the importance of accurate data entry and management.
7. **Collaborate with Supply Chain Stakeholders:** Work with your supply chain partners to ensure they are also prepared for DPP implementation and can provide the necessary data.
8. **Develop a DPP System:** Build or align your systems to support a cross-sectoral DPP, ensuring that you can manage and share product information effectively.
9. **Focus on Transparency and Traceability:** Assign each product a unique identifier compliant with ISO/IEC 15459:2015 and prepare to share product lifecycle information.
10. **Prepare for Reporting:** Set up processes for real-time reporting of product information as required by the DPP initiative.
11. **Ensure Data Security:** Establish protocols to regulate access to DPP information, ensuring data security and privacy.
12. **Support Circular Business Models:** Provide details on material sourcing, carbon footprint, recycled materials, durability, and recycling guidelines as part of the DPP.

| Final Thoughts

The Digital Product Passport (DPP) is an integral part of the European Union's strategy to achieve sustainability and circular economy objectives outlined in the EU Green Deal. Designed to accompany products throughout their lifecycle, the DPP provides a comprehensive digital record of product information, enhancing transparency, traceability, and consumer empowerment. By mandating accessible and detailed product information through technologies like QR codes, DPPs enable stakeholders across the supply chain—from manufacturers to consumers—to make informed decisions that align with environmental standards.

As the EU sets forth to roll out DPPs initially in key sectors such as electronics and textiles, the aim is to extend this initiative across various markets by 2030, potentially setting a global standard for product transparency and sustainability. This initiative not only supports the EU's environmental goals but also encourages global manufacturers and consumers to adopt more sustainable practices giving way to enhancing consumer rights as a whole.

The successful implementation of DPPs will require robust technical infrastructure, clear governance frameworks, and comprehensive data management systems to ensure the integrity, security, and accessibility of product data. This structured approach is crucial for the EU's transition to a circular economy, where products are designed for longer use, efficient recycling, and minimal waste, ultimately reducing the environmental footprint and promoting a sustainable future.

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