Digital product passports transform polymer supply chain transparency and compliance

The Horizon 2020 project "CIRCULAR FOAM - Systemic expansion of territorial CIRCULAR eco-systems for end-of-life FOAM" develops and demonstrates all technological steps required to achieve circularity of plastics in post-consumer applications, using the example of rigid polyurethane foams used as insulation in refrigerators and construction.

Circularise, one of the CIRCULAR FOAM partners, is redefining supply chain transparency with its cutting-edge blockchain software, making the required Digital Product Passports (DPP) a reality for today's businesses. By guaranteeing secure data transfer while protecting proprietary information, Circularise offers an essential platform for businesses to validate sustainability claims and meet compliance standards.

This innovation was recently scaled and tested with big players in the polymer industry as part of the CIRCULAR FOAM project. The technology arrives to address industries' challenges in complying with the demands of regulations and the increasing need to substantiate their eco-friendly initiatives. With Circularise, companies can confidently navigate this changing landscape by:

- Showcasing innovation and sustainability to customers
- Encouraging sustainability practices across industry sectors
- Gaining insights beyond first-level suppliers
- Calculating Life Cycle Assessments (LCA) and Product Carbon Footprints (PCF) backed by reliable, upstream data
- Adhering to stringent traceability and sourcing standards
- Combating greenwashing by validating sustainability credentials
- Selectively sharing information with different actors

In pursuit of circularity for rigid polyurethane (PU) foam used in appliances and construction, the CIRCULAR FOAM project taps into Circularise's expertise. In this project, Circularise is refining its platform to strategically connect value chain actors, ensuring seamless, secure interactions.

Collaborating closely with industry partners such as Electrolux, Unilin, Kingspan, and Covestro, Circularise has tailored its platform to address pressing business needs and regulatory demands focused on:

- Material safety and sourcing, identifying harmful substances and tracking material origins
- Foam attributes, improving the sorting and recycling processes.
- Disassembly and installation processes, boosting the materials' recovery rates.
- Environmental impact, aligning with the increasing demand for sustainable practices.

Partners have successfully piloted the platform. Using Covestro's raw materials for foam manufacturing, these pilots included products within the project's scope, from refrigerator doors to insulation boards and metal panels. These efforts demonstrated how the Circularise platform

empowers firms to map their products' journey upstream (and entire lifecycle) while ensuring regulatory compliance seamlessly. Companies were able to get details about components, their chemical and sourcing composition, mechanical properties, and more, all based on blockchain-validated authenticity (substantiated claims) and top-tier encryption (secure and confidential).

In the upcoming months, Circularise will continue to refine its platform to better align with the needs of the industry and showcase the tangible benefits of its application.

During a webinar on January 29th, 2025, several CIRCULAR FOAM partners will take a close look at the implementation of digital product passports (DPPs) for the appliance and construction sectors, focusing on the benefits and challenges. More information will follow soon on the CIRCULAR FOAM website.
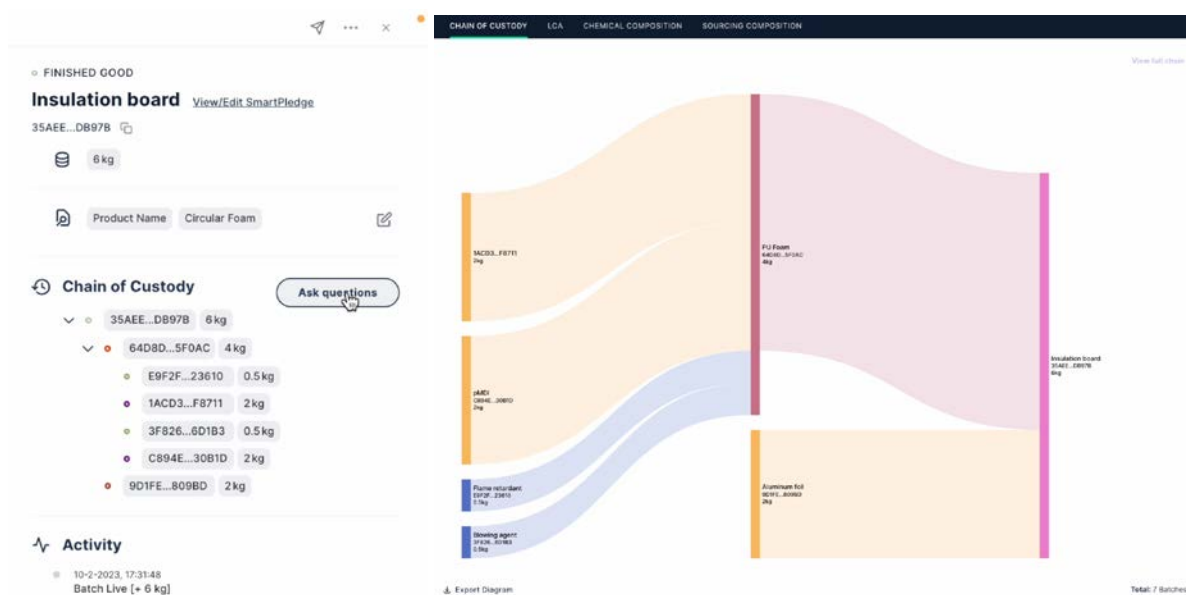

Figure 1: Screenshot of the Circularise platform (© Circularise).

The screenshots of Figure 1 represent an example of the traceability of a construction product: an insulation board. This traceability reflects up to the chemicals that make up the PU foam. Additionally, it shows some data that users can get when clicking through the different components, for example, REACH and RoHS compliance and, the presence of substance of very high concern (SVHCs) and Critical Raw Materials, among others.

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