

2026



Trial Production of PP from Aarhus River

Report

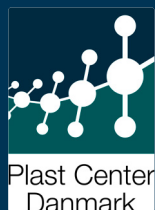
2026

Report on trial production of demonstration products from river-collected polypropylene

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Circular Ocean-bound Plastic

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Disclaimer

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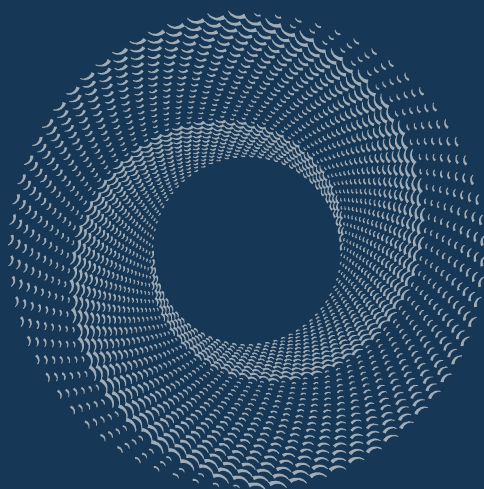
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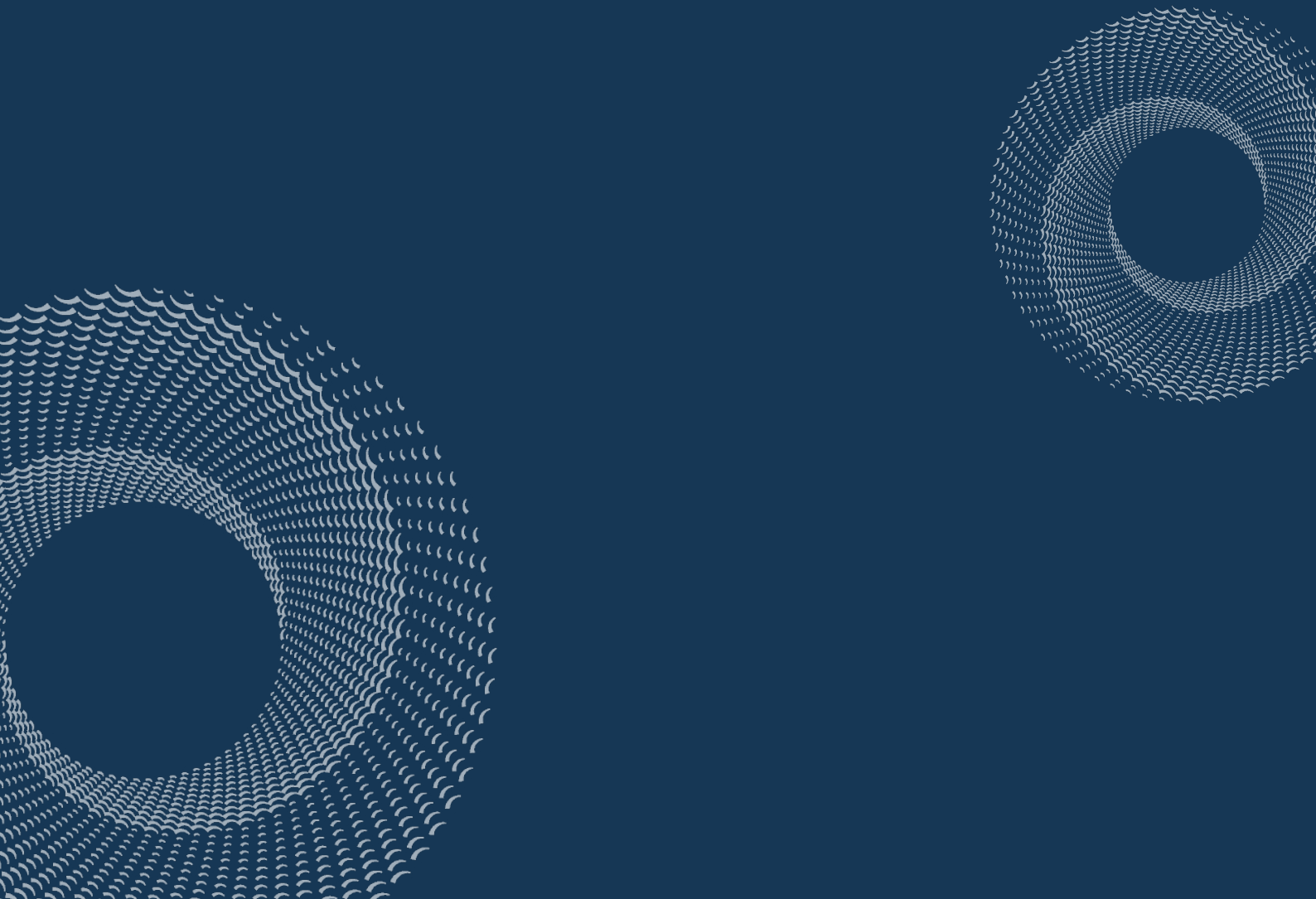
1. Introduction



1. Introduction

As part of Activity 4.5, Opportunities of Trial Production with Selected SMEs, Plast Center Danmark investigated whether polypropylene (PP) recovered from Aarhus River could be converted into durable demonstration products. The purpose of the activity was to move beyond laboratory testing and demonstrate to companies and other stakeholders that sorted river-collected plastic can be used as a material resource for new products.

2. Preparation

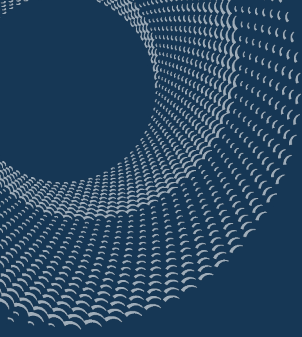


2. Preparation

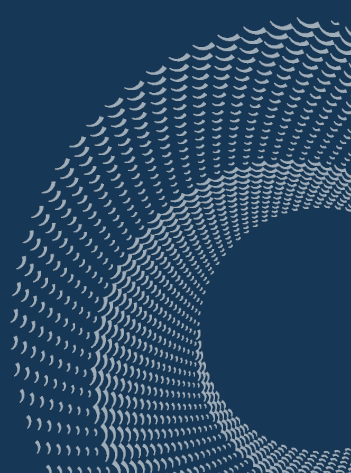
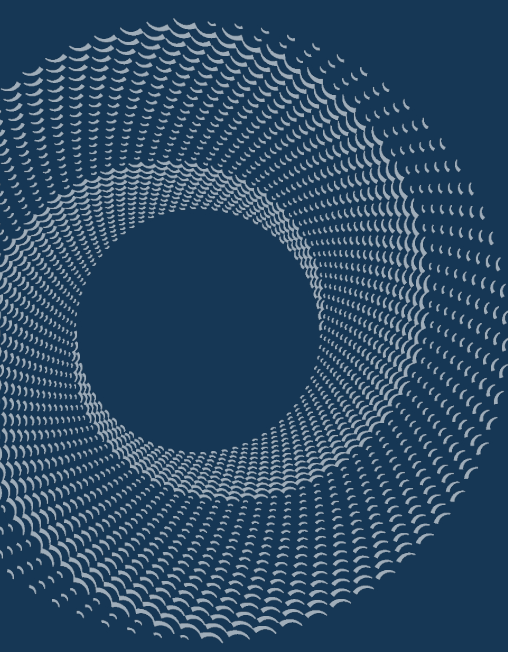
A selected PP fraction was therefore sent to Sustainable Solutions for All (SSA) in India, a company with which Plast Center Danmark had previously collaborated.

SSA was asked to process the material and manufacture demonstration products that could illustrate the practical reuse potential of riverine plastic.





3. Production process



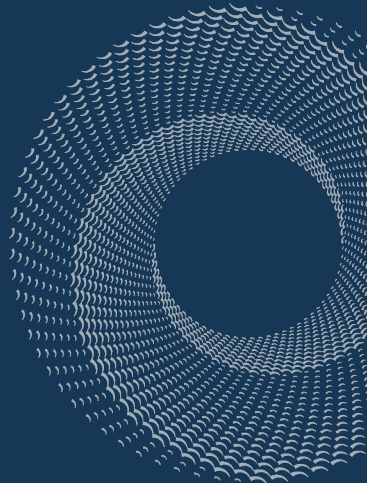
3. Production process

The plastic was processed by thermal compression in an industrial sheet press. According to the processing information provided by SSA, the material was pressed at approximately 240°C under 400 tonnes of pressure for 30 minutes. This produced dense structural sheets intended to have a low level of internal voids.

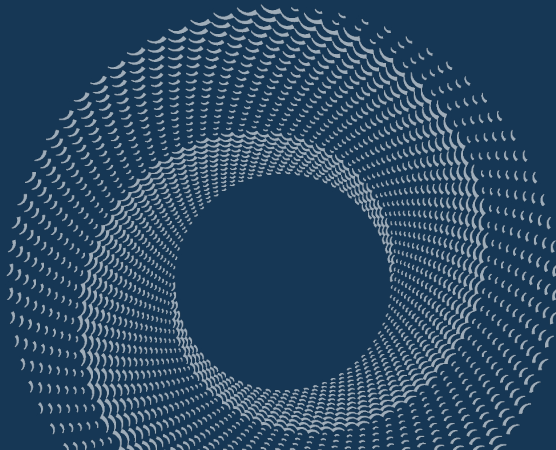
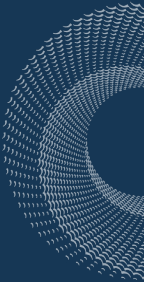
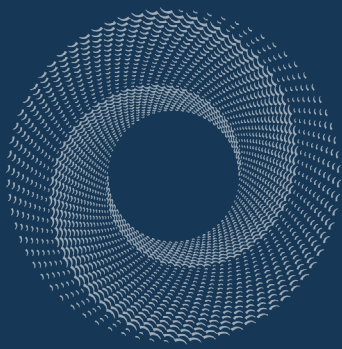
After pressing, the sheets were subjected to a controlled air-cooling period of approximately 30 minutes. The cooling stage was used to stabilize the material, reduce internal stresses and limit warping of the finished panels.

The stabilized sheets were subsequently cut and shaped using precision CNC milling. Final assembly and finishing were carried out by hand.





4. Demonstration of products

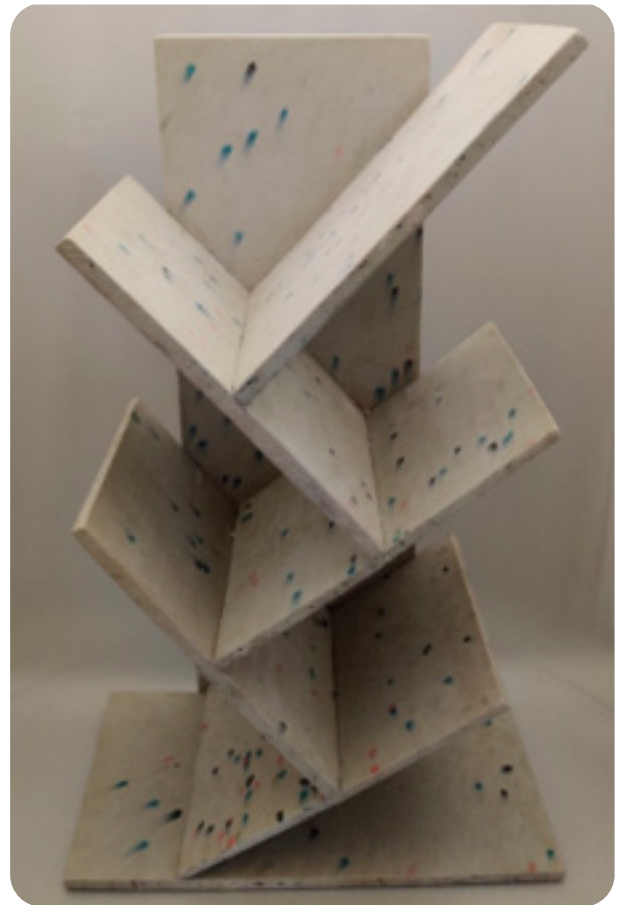


4. Demonstration of products

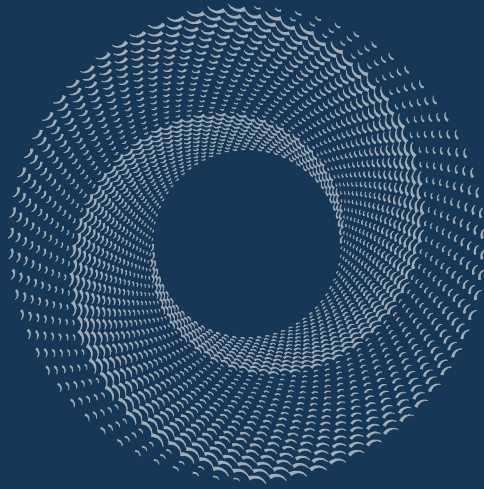
The recycled PP was used to manufacture:

- Trophies
- Bookshelves

The completed products demonstrate that properly sorted and processed river-collected PP can be transformed into functional demonstration products rather than being treated solely as waste.



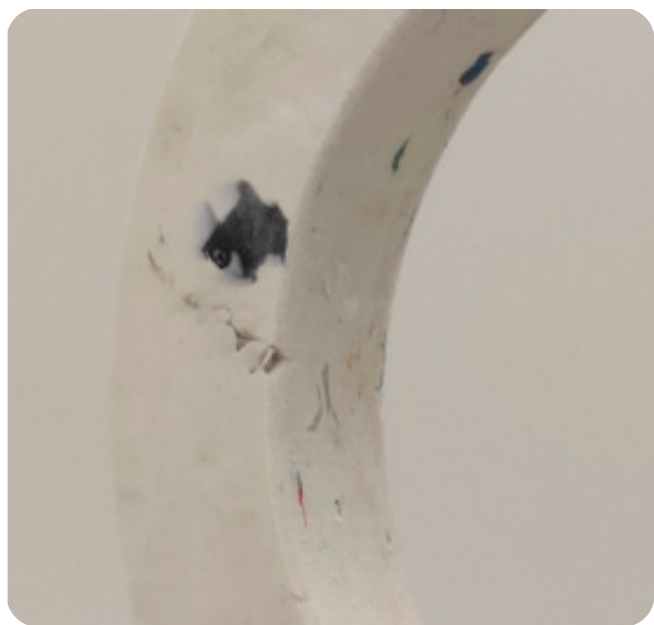
5. Product appearance



5. Product appearance

Following production, the appearance and sensory characteristics of the demonstration products were assessed. The main observations of the finished products were as follows:

- Predominantly light grey-brown colour with a heterogeneous appearance
- Scattered spots and inclusions of different colours
- Small air pockets or voids were also visible within parts of the compressed plastic material
- A noticeable musty or earthy odour, which was already associated to the river-collected plastic material.



The observed colour variations may be related to differently coloured PP fractions remaining in the recycled feedstock after sorting and cleaning. A thermal preparation of the PP fractions such as thermal mixing process prior to the thermal compression could result in a more uniform colour.

Although the thermal compression process was intended to produce dense sheets with a low level of internal voids, the presence of visible air pockets indicates that trapped air or volatile, residual moisture or contaminants, or variations in the materials flowability.

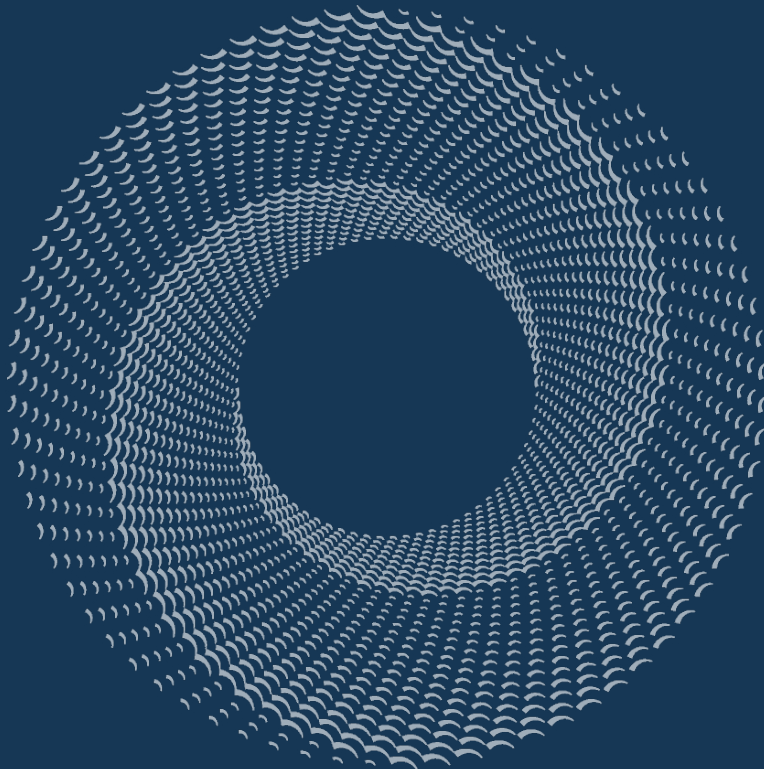
Similarly, the observed musty or earthy odour suggests that substances associated with the material's previous exposure to the river environment may have remained in the PP fraction despite sorting, cleaning and high-temperature processing.

These observations highlight some of the challenges associated with converting post-consumer river-

collected PP into new products.

While the trial demonstrated that the material could be processed into functional demonstration products, the observed odour, colour variation and internal air pockets indicate that further optimisation of feedstock preparation and processing may be required if a more homogeneous appearance and material quality are desired for future commercial applications.

6. Circularity

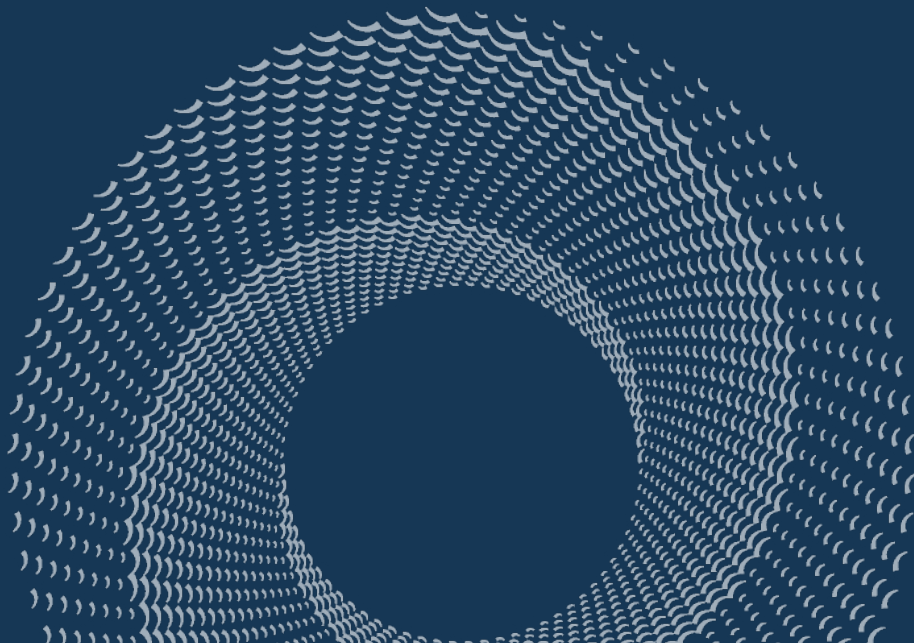


6. Circularity

SSA also reported that the off-cuts generated during CNC machining were collected and retained for future recycling. This reduced production waste and supported a more circular use of the material. However, the products should primarily be regarded as demonstration-scale outputs. Additional evaluation would be needed before larger-scale commercial production, including assessment of feedstock consistency, process economics, product performance and compliance with relevant product requirements.

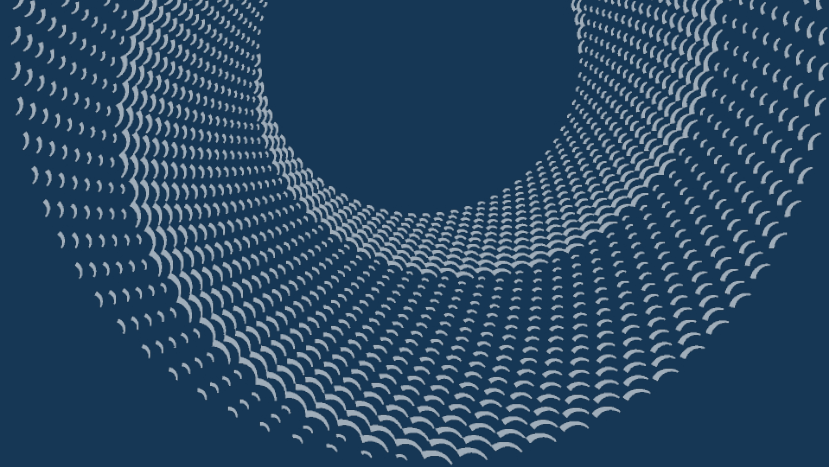
7.

Key findings



7. Key findings

Overall, the trial production provides a practical example of how riverine PP can be reused after suitable sorting, cleaning and processing. Together with the mechanical and chemical recycling investigations conducted in the COP project, the demonstration products show that collected ocean-bound plastic may have several potential recovery routes depending on its polymer type, cleanliness and material quality.



Circular Ocean-bound Plastic

Breaking the waves of ocean plastic pollution
- From source to solution

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