

November 2022

The Circular Plastics Taskforce (CPT)

Implementation of industrial-scale solutions to accelerate the creation of a circular economy for plastics in Canada



GRUPE D'ACTION PLASTIQUES CIRCULAIRES
CIRCULAR PLASTICS TASKFORCE



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Circular Plastics Taskforce (CPT)

WHAT?

A taskforce aimed at helping to build a circular economy for post-consumer plastics in Quebec and Canada.

HOW?

Find a better alignment between end-market needs for recycled resins and value chain stakeholders, through the identification and implementation of short and medium-term solutions to optimize plastics recycling.



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CIRCULAR PLASTICS TASKFORCE

A Unifying Project



Completed!

Phase I

Value chain mapping and optimization proposals

Winter 2020 to Fall 2021

In the works!

Phase II

Pilot projects to test and monitor optimization scenarios

Winter 2022 to ...

Phase III

Scaling up of pilot projects

2023 to ...



Environment and
Climate Change Canada
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With the financial support of

Québec 

Phase I in a Nutshell

130+

Interviews

5

Key Findings

5

Simulation
Tests

18

Recommendations

Check out our [White Paper!](#)

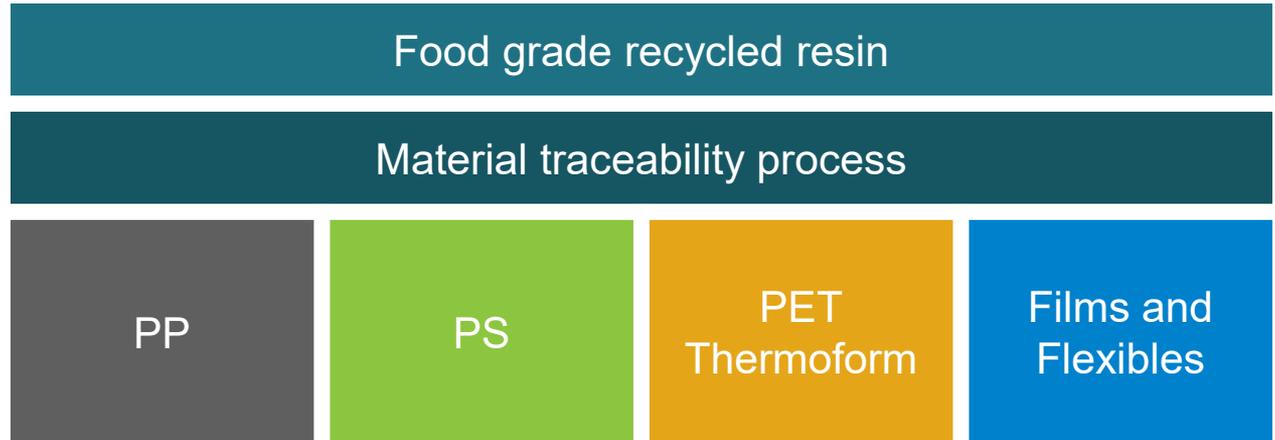
Phase II Objectives and Projects

Implement industrial-scale solutions to quickly & concretely improve the quality of sorted materials, as well as the recycling rate of plastic packaging.

More specifically, the projects will look at:

- Increasing capture rate and improving quality measurement at MRFs
- Secondary sorting at processors
- Production of food-grade PCR resins

The projects will be adapted to consider the specificity of each plastic type and their value chain



Food Grade Certification Process for Recycled Resins

Objective:

Develop a roadmap aimed at systematizing the process of obtaining food grade certification for recycled resins, while maintaining the high level of quality standards required.

- **Implementation steps**

- Identify existing authorizing mechanisms in North America and Europe, and success factors to streamline the approach
- Snapshot of the current process applicable to each target resin (control of feedstock and outputs)
- Proposal of a roadmap to systematize the food grade certification process for recycled resins

- **Next steps**

- Select service provider to support project implementation (RFP in progress)
- Create Technical Monitoring Committee

- **Deadline:** March 2023

Value Chain Traceability for Plastics from Curbside Collection

Objective:

Assess the approach, advantages, disadvantages and compatibility of various traceability systems, measure their applicability in Quebec, and plan a pilot project

- **Implementation steps**

- Overview of existing and emerging traceability approaches applicable to waste management
- Documentation of reporting needs, specific nomenclature and most efficient implementation procedure associated to the different systems
- Identification of specifications for traceability monitoring tools in the pilot project(s)

- **Next steps**

- Select service provider to support project implementation (RFP in progress)
- Create Technical Monitoring Committee

- **Deadline:** March 2023

Secondary Sorting of Rigid Plastics (PP)

Objective

Determine whether artificial intelligence sorting technologies can support the production of food grade recycled PP from residential curbside collection

- **Implementation steps**

- Identification of existing technologies and definition of specific sorting and traceability needs
- Based on existing packaging databases, development of a new tool capable of leveraging data to support improved recognition of packaging attributes
- Conduct technology trials to measure the impact on packaging recognition rates, in a real-world environment

- **Next steps**

- Develop approach and methodology
- Partner engagement

- **Deadline: TBD**

PS Closed Loop Initiative

Objective

Develop a roadmap to build a complete value chain for food grade recycled PS

- **Implementation steps**

- Characterize the different sources of PS, taking into consideration their specific types and attributes (food grade vs non food grade)
- Conduct mechanical and molecular recycling tests to measure the attainment of Health Canada criteria and integrate the recycled resins into new packaging
- Assess the feasibility of using MRFs as a source of supply

- **Next steps**

- Feedstock characterization
- Develop approach and methodology
- Partner engagement

- **Deadline: TBD**

Clear PET Thermoform Recycling

Objective

Demonstrate the technical feasibility of recycling bales containing higher proportions of PET Thermoform, while maintaining product safety in food applications

- **Implementation steps**

- Produce PET bales with higher proportions of PET Thermoform
- Conduct tests at recyclers and measure recyclability KPIs
- Draft a proposal for PET bale specification and eco-design guidelines
- Characterize colors found in opaque PE

- **Next steps**

- Partner engagement
- Characterization and production of PET bales

- **Deadline: December 2022**

Film and Flexibles Innovation Hub

Optimize the capture rate of films and flexibles in MRFs and at recyclers using different sorting technologies, working towards obtaining food grade PCR

- **Why in Eastern Canada ?**

- PE films and flexibles are already collected through most recycling programs in Canada, but technical challenges remain (estimated only 1% is recycled)
- Canada's provinces are transitioning to full responsibility (EPR) schemes, which comes with ambitious collection and recycling targets for films and flexibles
 - Ontario: Recycling rate 25% by 2026, 40% by 2030
 - Quebec: Recycling rate 40% by 2027, 50% by 2030
- Strong market demand for PCR, but recyclers must deal with high bale contamination (up to 30-40%), lack of consistency and major collection & sortation challenges

Preliminary Project Overview

A 3-Pronged Approach

Part 1: Preliminary tests

Application of digital watermarks and assessment of ejection rates and bale purity in a controlled environment

Four converters, Digimarc, Pellenc

Part 2: Industrial tests

On-site pilot projects to test digital watermarking and other technologies to sort films and flexibles in MRFs and at recyclers

Converters, brand owners, two MRFs, 2 - 3 recyclers, Digimarc, Pellenc, other industry players

Part 3: End-Markets

Analyze outlets for newly created non-PE films and flexibles bales

Technology developers, potential recyclers

Part 1: Partners

DIGIMARC | 

 PELLENC ST

 WINPAK

 GAPC
CPT


balcan

 tc • TRANSCONTINENTAL

See our June 9 [press release](#) with Digimarc !

Part 1: Objectives and Methodology

Objective:

In a controlled environment, test the ability of existing equipment to sort digitally marked films and flexibles with varying print coverage from mixed materials

- Test performed at the Pellenc testing center in Pertuis, France between July 13-21, 2022
- Test a combination of NIR technology and watermark reader
- 16 different flexible samples from four different manufacturers were tested
- Five different tests were performed:
 - Baseline test: Samples were placed alone on conveyor to test ejection
 - Three mixing tests, to test for multiple collection systems:
 - Single Stream Collect (SSC): mostly flexibles, post-sorting at MRF
 - Dual Stream Fiber (DSF): mainly papers, newspapers and cardboards
 - Dual Stream Container (DSC): mainly bottles
 - A monolayer PE vs Multilayer PE/PET test

Part 1: Conclusions

- The trial was successful in confirming that the Digimarc technology works to sort films and flexibles.
- Ejection rates of samples meeting Digimarc enhancement guidelines (particularly on watermark coverage) averaged 99%.
 - In general, ejection rates were excellent (98% average) when watermark coverage exceeded 50%.
- Most of the ejection challenges were related to overlapping: a disc spreader is usually used to avoid this issue by spreading products on the conveyor.
- The purity rates for two of the three mixing tests were very good: the Single Stream Collect purity rate was lower (87%) due to challenges related to ejection of films and flexibles by sorting equipment.
- The Monolayer vs Multilayer test further proved the ability of watermarking to sort any sample on a SKU basis.
- The combination of NIR and watermarking improved performance without impacting the purity.

Part 2 of the Digital Watermarking project can move forward

Next Steps

Part 2 - Industrial Tests

Objective:

Assess the detection rate of highly-printed films and flexibles with digital watermarking and determine best practices in terms of implementation of equipment, including ideal location in MRFs

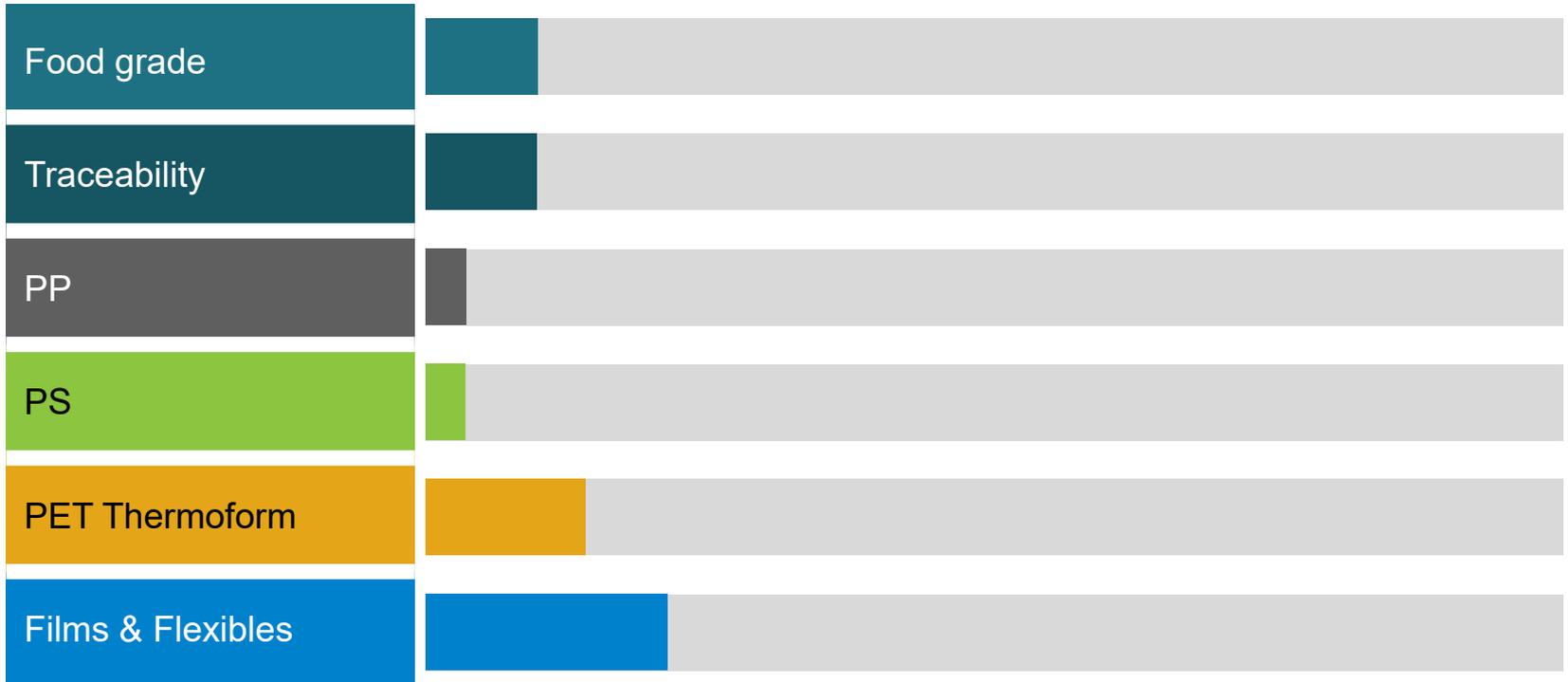
Fall 2022

- Design mobile sorting equipment with digital watermarking reader
- Identify MRFs and recyclers where to install equipment
- Reach out to brand owners and manufacturers to add digital watermark to printed films and flexibles on the market in Québec and Ontario
- Reach out to potential financial partners

2023

- Order and build equipment
- Install equipment at chosen MRFs and recyclers
- Test sorted PE bales to produce PCR

Phase II : Status Update



Be part of our
initiative!



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