

CREAToR - Collection of raw materials, removal of flame retardants and reuse of secondary raw materials (1.6.2019-31.05.2023)

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Agenda

- What does CREATOR aim for?
- What has CREATOR achieved so far?
- What is CREATOR's wider impact on the circular economy and on Processes4Planet objectives?
- Plastics Circularity Multiplier Initiative.

CREATOR

COLLECT • PURIFY • REUSE

THE PROCESS



INNOVATION

A new, cost-effective approach



Consideration of the **whole value chain** for various polymers **ABS, PC, PA, PS**



Characterisation and sorting of large polymer parts containing brominated flame retardants at **kg scale**

Removal of Br-FR down to **0,1 wt-%** in continuous process at kg scale

MARKET INTEGRATION

CREAToR delivers solutions to various steps of the production chain

construction & demolition



waste source
end-product re-use

electrical & electronic equipment



waste source
end-product re-use

aeronautics industry



waste source
end-product re-use

automotive industry



end-product re-use

recyclers



characterisation in the sorting and removal of hazardous components

polymer parts manufacturers



labeling and re-additivation

DEVELOPMENT OF INTEGRAL LOGISTIC CONCEPT



collection of waste



separation of polymer parts



continuous extraction for removal of Br flame retardant



labelling of Br free material



modification for reuse



Sorting line with LIBS technology (Laser-Induced Breakdown Spectroscopy) for characterisation



Extractive extrusion with super critical CO₂ and NADES ionic liquids for the purification



Re-additivation for the re-use (new flame retardants, processing additives)

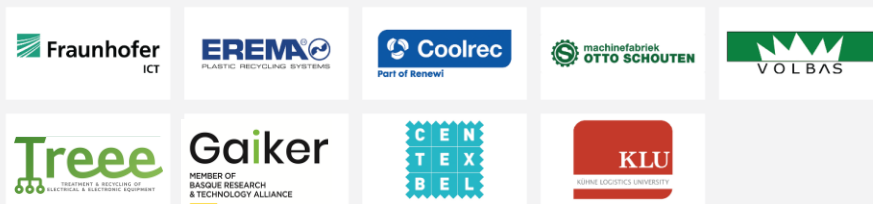


Labeling of the material to ensure hazardous flame retardant content < 0,1 wt-%

TECHNOLOGIES

THE CONSORTIUM

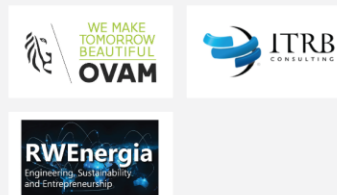
RECYCLING



RE-USE



LCA • DISSEMINATION • LEGAL



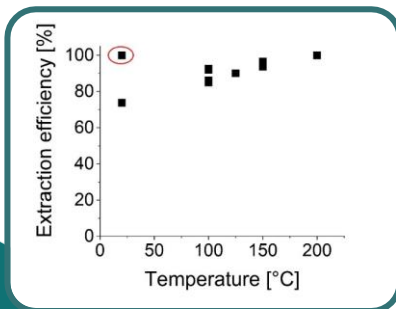
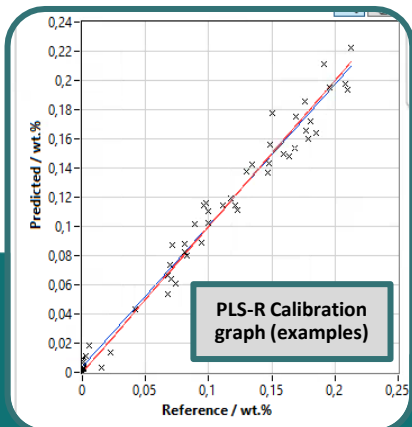
This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 820477

Key objectives and first results

Recycling

Identification + Sorting + Purification

- Sorting at the contamination level of 1000_ppm bromine
- Batch and continuous extraction of flame retardants in extrusion, sc-CO₂ and NADES as extractive liquids

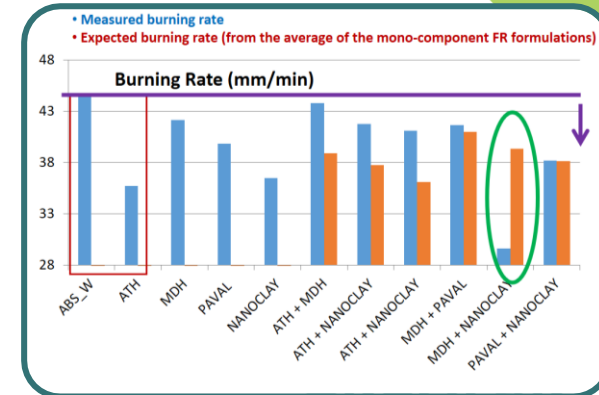
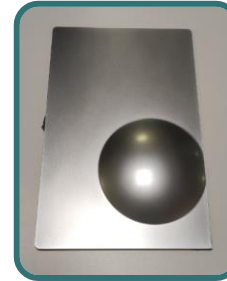
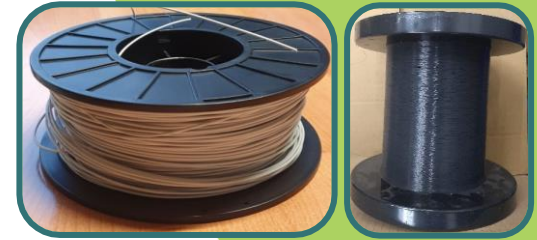


Key objectives and first results

Re-use

3D printing filament + automotive interior + insulation panel

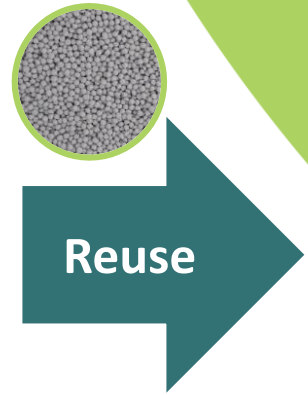
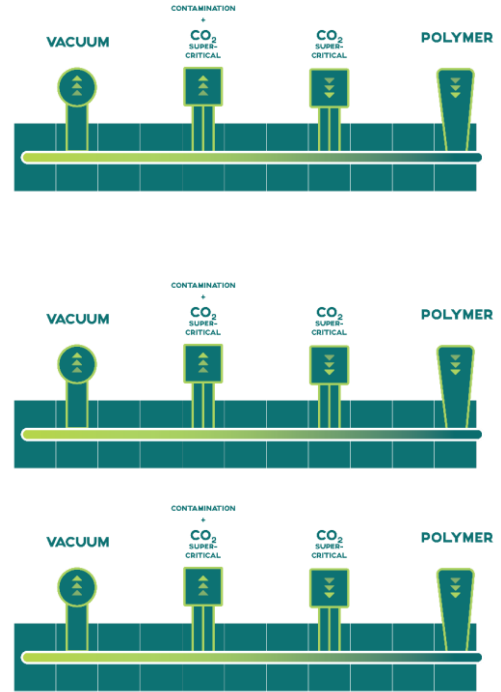
- Extrusion of 3D printing filaments from recycled materials
- Injection moulding of recycled materials
- Thermoplastic foam expansion of recycled materials
- Environmentally friendly flame retardants



Key objectives and first results

Reverse logistics

- Requirements set up
- **Model** development ongoing



Impacts



TECHNICAL

System for **precise separation of the plastics**

Removal of legacy additives

Increasing the recycling rate by recovering plastics fractions that are currently sent to incineration (reduction of more than 45% of the waste plastic fraction)



SOCIAL & ECONOMIC

Ensuring new material sources lowers the dependency on **petroleum sources** within Europe

More **circular models for plastics**

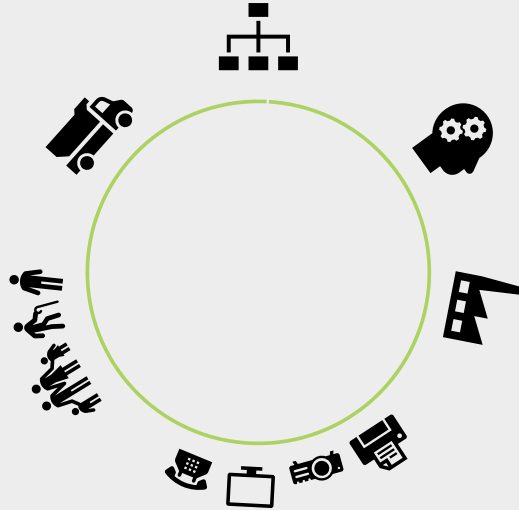
Keeping recycling technology at the highest technical level and therefore protecting European jobs in the sector

Offering treatment solutions for a **wider range of waste** within Europe

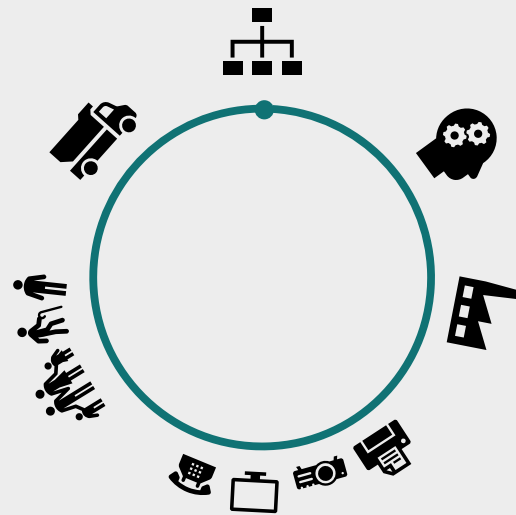
Shifting the vision of recycled plastics towards a safe secondary raw material

But this is only a tiny part of the loop

Alone you can try to be circular



You need **collaboration** to be circular



THE KEY TO SUCCESS IS COLLABORATION



Further information



Meet us at the IndTech2022 27.-29.6. in Grenoble!

Two summer schools this year (PhDs, students), more information at the homepage

Summer School on Plastics Recycling in Linz, Austria. July 22

Summer School on Plastics Recycling using Design Thinking , Hamburg, Germany. October 22

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Plastics Circularity Multiplier

Plastics Circular Multiplier was set up in 2019 **to pool resources and expertise and “multiply” key messages** from the ecosystem of projects that receive funding from the EU’s Horizon 2020 research and innovation programme.

Twenty one innovation projects focused on improving plastics circularity joined the initiative to enhance value chain collaboration and create cross cooperation between EU Projects.

Members



Synergies

H2020 - NMBP

Nanotechnologies,
Advanced Materials,
Biotechnology, and
Advanced Manufacturing
and Processing



H2020 - SC5

Horizon 2020 Challenge 5
"Climate Action,
Environment, Resource
Efficiency and Raw
Materials"



H2020 - SPIRE

Sustainable Process
Industries and Resource
Efficiency



H2020 - CIRC

Circular Economy



Future Plan

Next Steps

- Re-launch of activities and expected presence in following events
 - Specially dedicated event end of summer
 - Innovation Forum in October 2022
 - ECOMONDO in November 2022.

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