



Circular Flooring – update on project status

New Products from Waste PVC Flooring and Safe End-of-Life Treatment of Plasticizers

Plastics Circularity Multiplier – Online Conference 14th October 2020

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 821366

Project Profile

- Project Circular Flooring (New Products from Waste PVC Flooring and Safe End-of-Life Treatment of Plasticizers)
- Coordination Fraunhofer IVV, Dr. Martin Schlummer
- Funding scheme Horizon 2020, Grant Agreement Number 821366
- EU funding € 5.4 million
- Duration 4 years (06/2019-05/2023)
- Website www.circular-flooring.eu

Circular Flooring Consortium



Fraunhofer Institute for Process Engineering and Packaging IVV

Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT Institute Branch Sulzbach-Rosenberg

KU LEUVEN

Katholieke Universiteit Leuven



National Technical University of Athens

INERIS

controlling risks | for sustainable development

Institut National de l'Environnement et des Risques



thinkstep

Thinkstep AG



Lober GmbH & Co Abfallentsorgung- KG



Vinnolit GmbH & Co KG



Chemson Polymer Additive AG



Arbeitsgemeinschaft PVC Bodenbelag Recycling



Bavarian Research Alliance GmbH

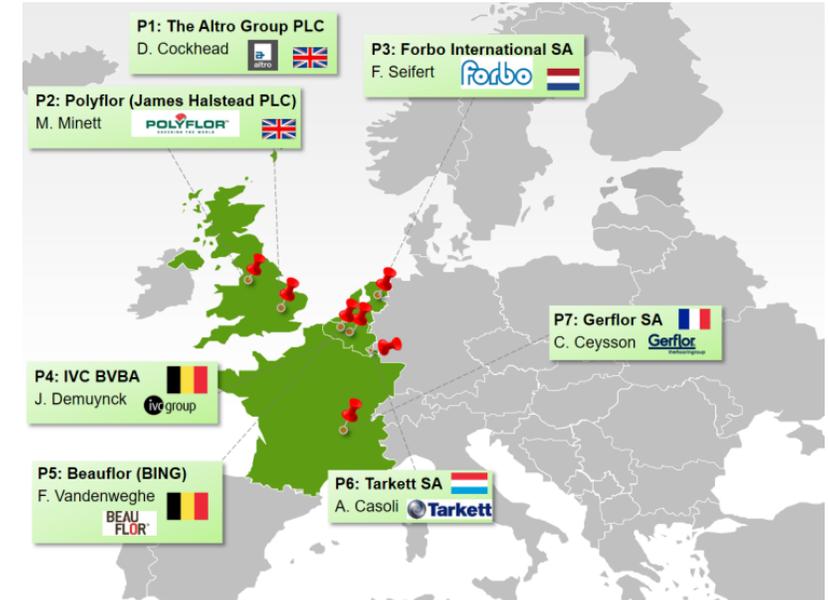
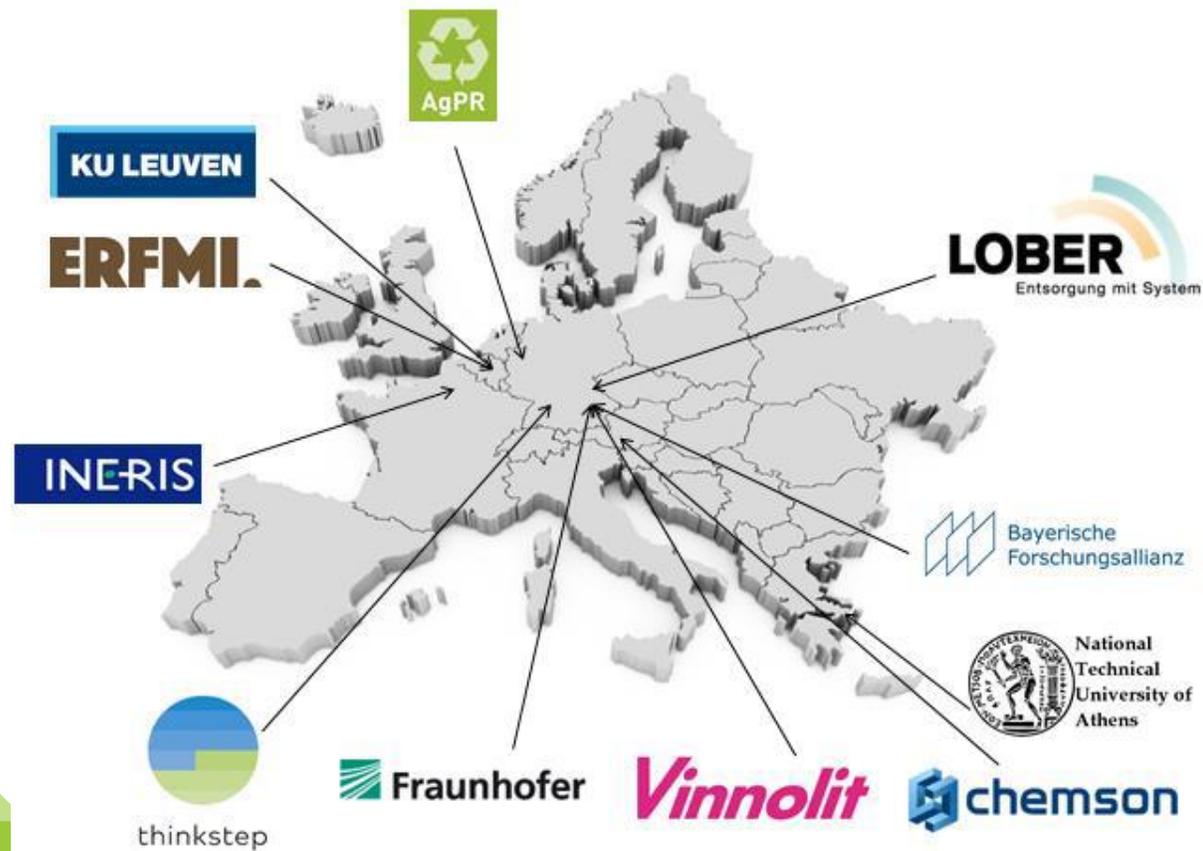


European Resilient Flooring Manufacturers Institute VZW



Circular Flooring Consortium

Consortium



Linked Third Parties

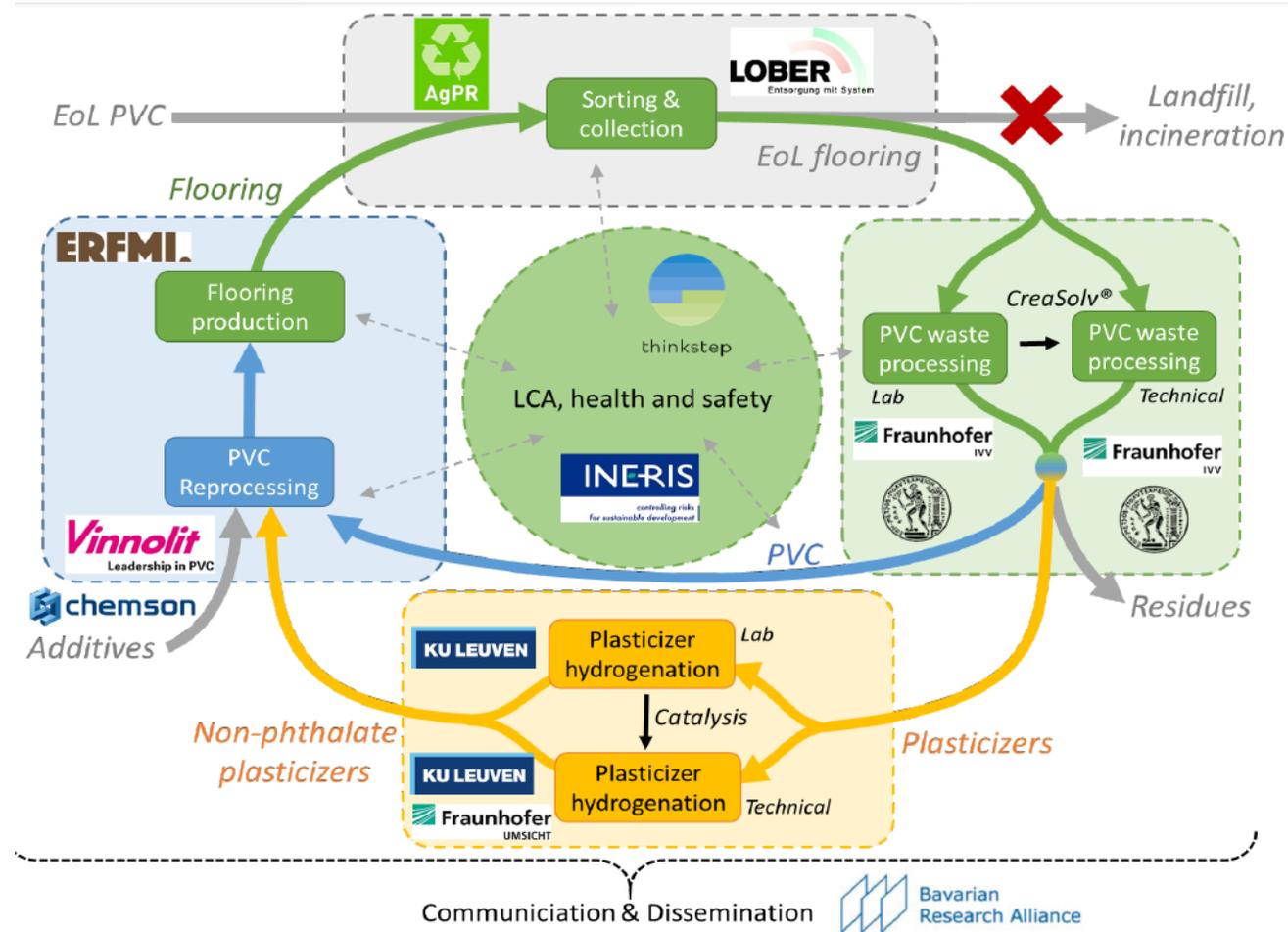
Project Objectives

The aim of the EU-funded project Circular Flooring is to enable the circular use of plasticized PVC from waste flooring by developing recycling process that eliminate legacy phthalic acid esters that are not conform with the EU REACH Directive.

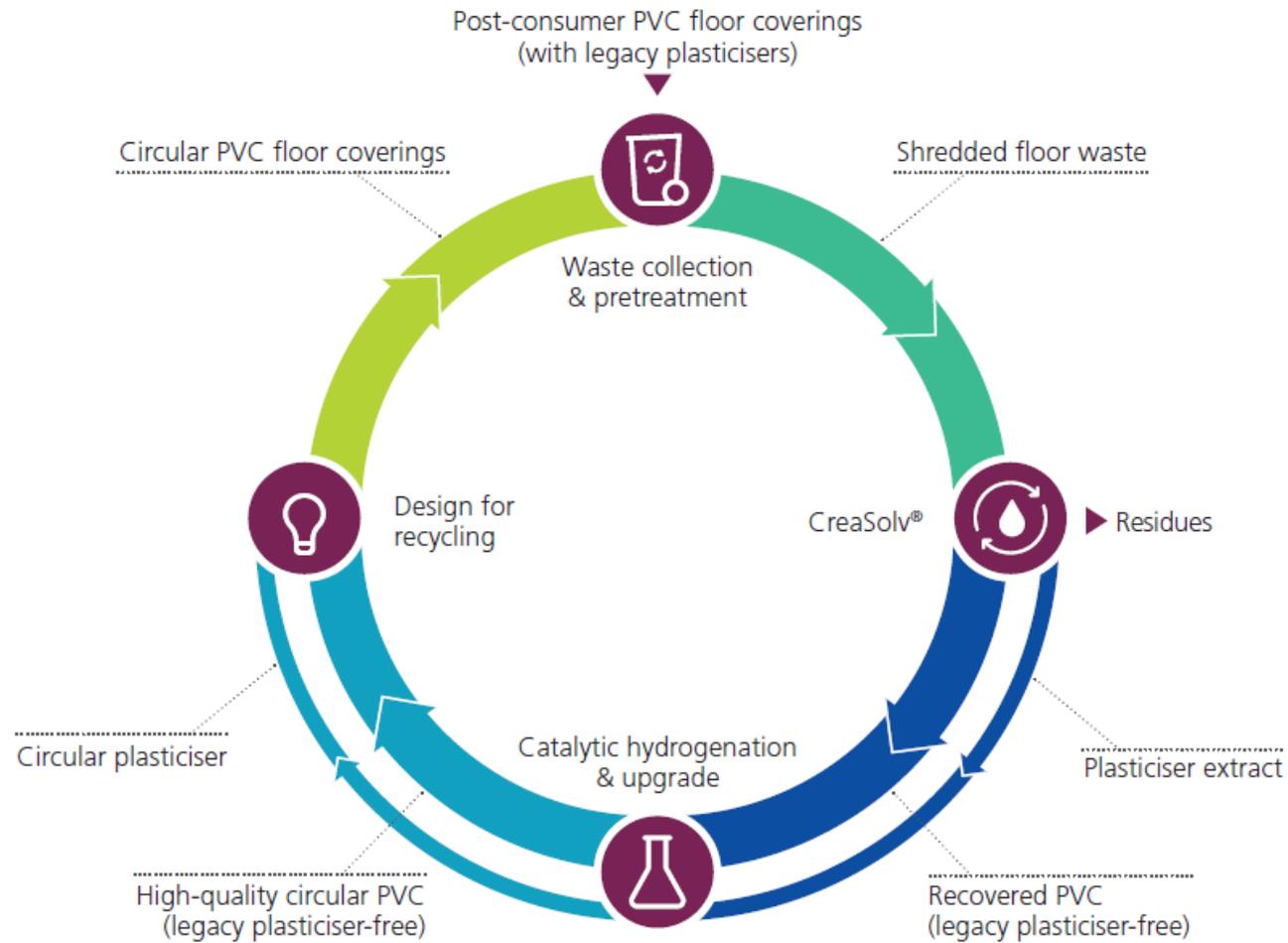
Main objectives:

- Develop a process for recovering secondary legacy phthalate-free PVC from flooring waste, thus preventing usable resources from landfill or incineration
- Demonstrate circularity of PVC in flooring and applicability of phthalate free plasticizers that are compliant to REACH from waste flooring
- Assessment of environmental, health and safety impacts and techno-economic feasibility

Project tasks



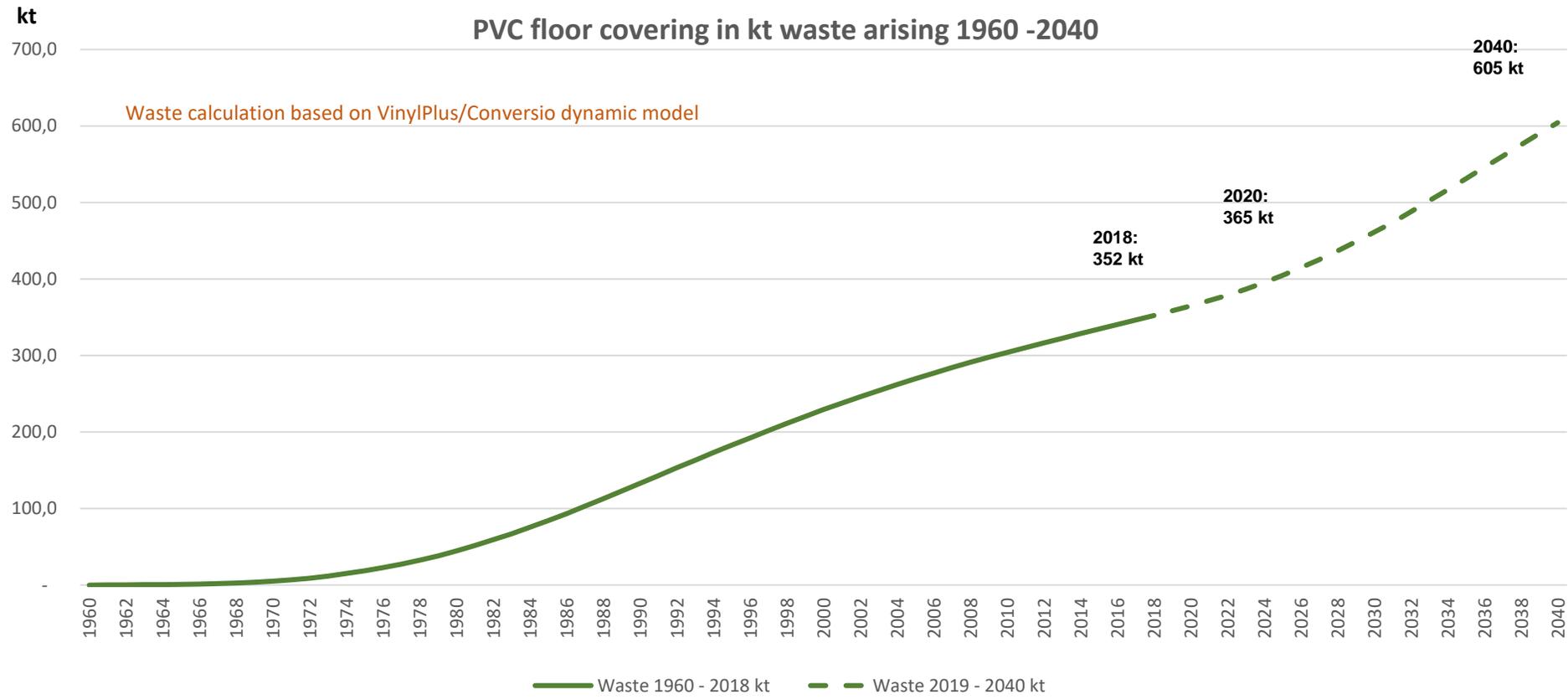
The Recycling Process



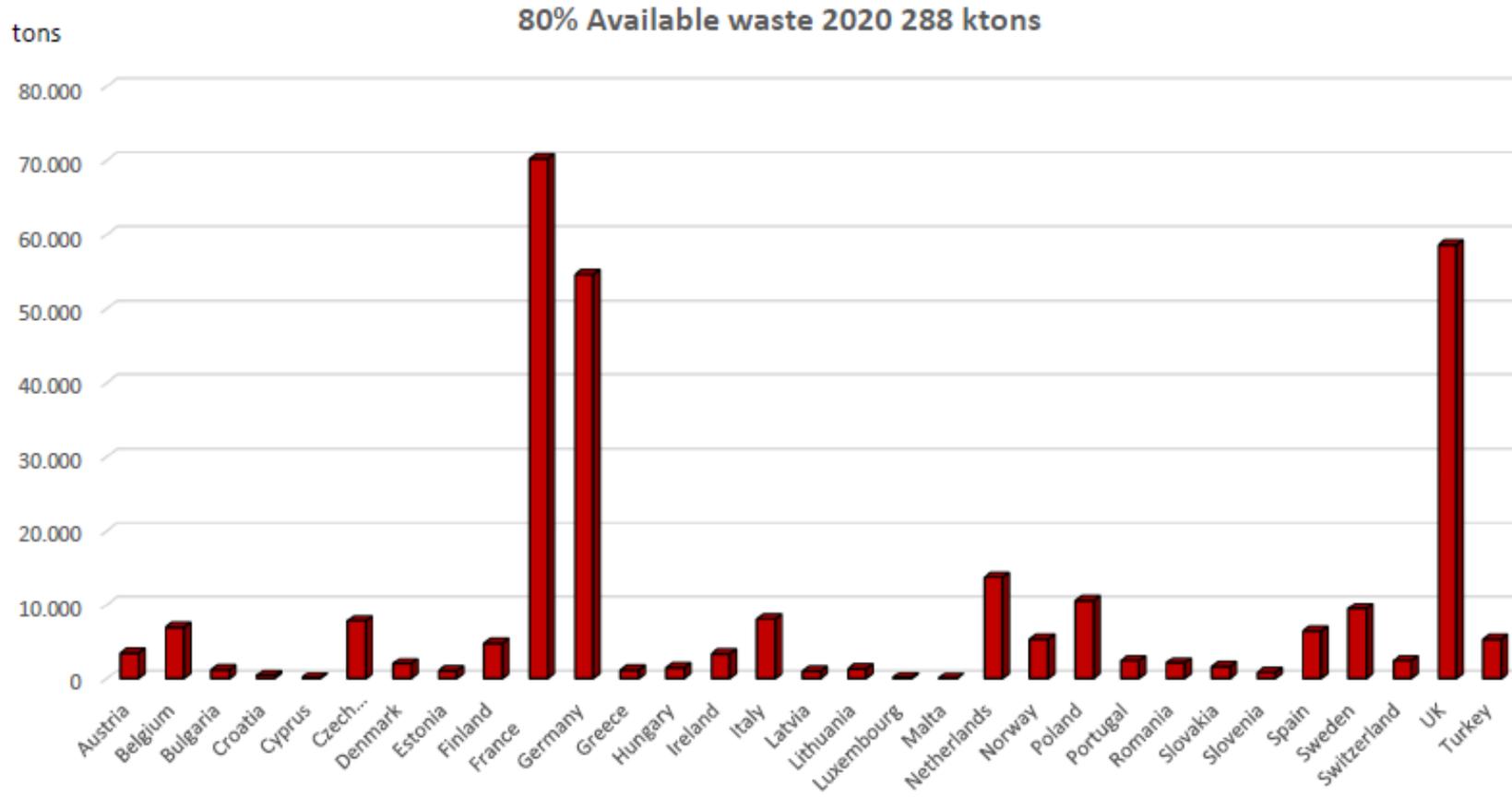
What do we plan to achieve?

- Survey of PVC flooring waste generation (production, sales, waste generation, waste collection)
- Proof of the recycling process (removal of phthalates, hydrogenation of phthalates) at lab scale
- Implementation at pilot scale
- Production of r-PVC flooring and evaluation of quality
- LCA & Environmental and Health Risk Assessment
- Business Model

What has been achieved so far?



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8% (= 23 kt) of this waste stream is collectable with current effort, but can be enlarged through economic, political, etc. incentives

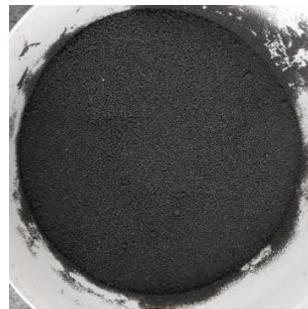
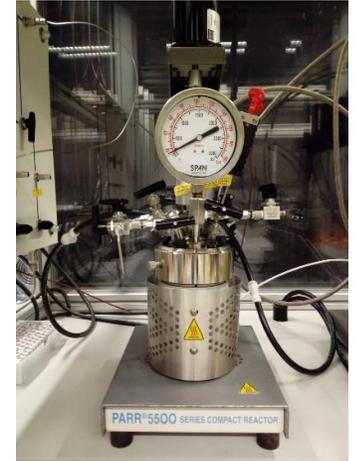


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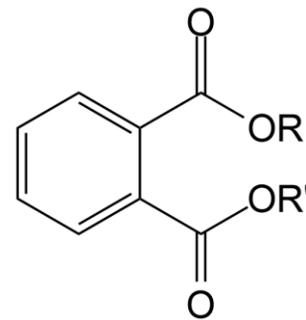


Feasibility of the processes has been shown at lab scale:

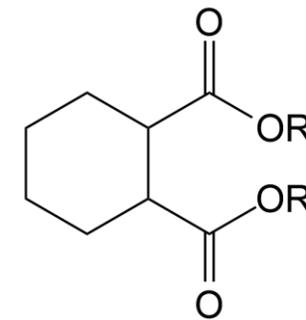
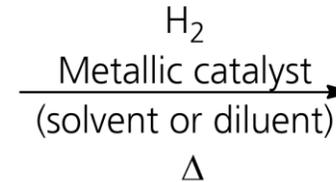
- PVC recycling
- Removal of phthalate plasticizers to <1000 ppm
- Full conversion of all phthalates into non-toxic plasticizers, via catalytic hydrogenation



Products from different inputs



Phthalate esters

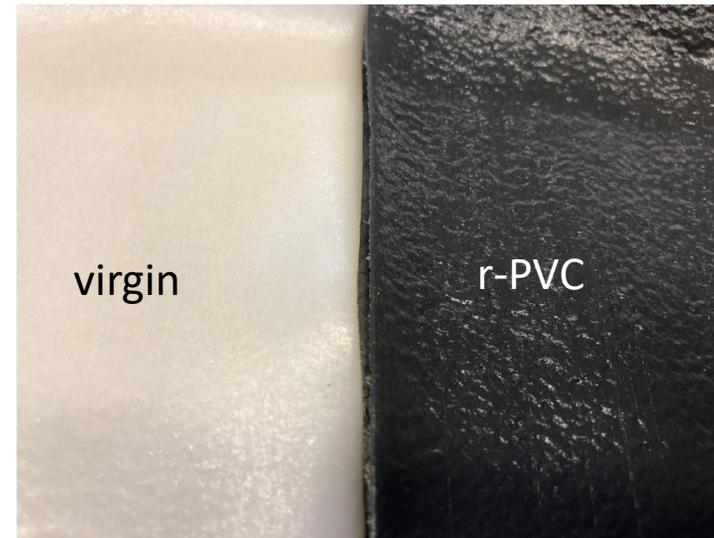
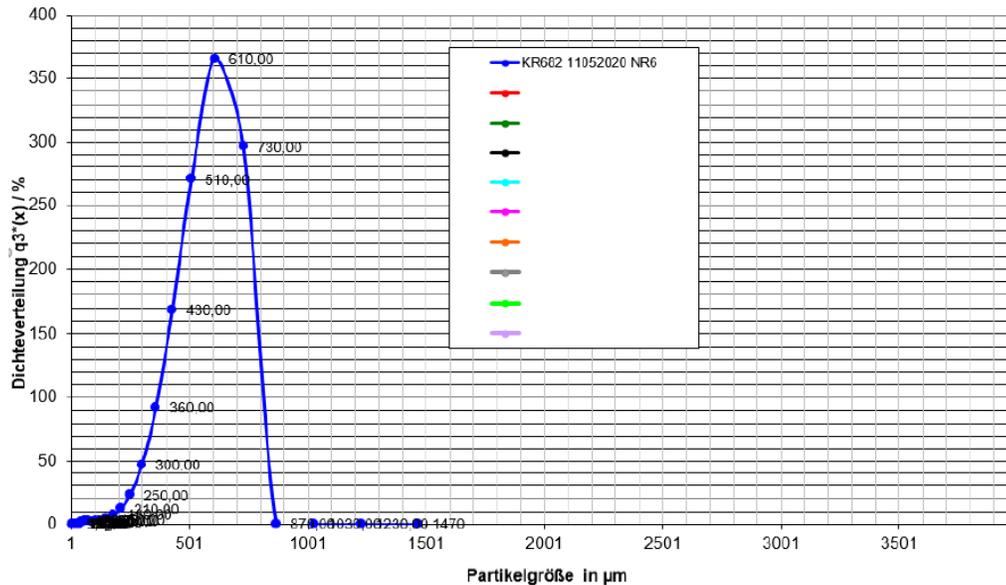


Dialkyl 1,2-cyclohexanedicarboxylate esters



H6- yield > 99%

What has been achieved so far?



Picture 4: Samples after extrusion

Feasibility of process have been shown at lab scale:

- Processable PVC recycle

Particle size:

- virgin: ~100 µm
- r-PVC: ~ 500 µm

Advantages of the CreaSolv® Process



- Solvent-based technology for separating substances, thus making it possible to retain valuable resources in the circular economy
- The CreaSolv® Process uses solvent formulations that do not contain hazardous substances under EU-chemicals-legislation and therefore pose no risk to users and the environment
- Helps the EU in its goal of establishing a circular economy in Europe



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Benefits for the European Society

- Contribution to establishing a circular economy in the EU
- Reduction in consumption of primary resources
- Removal and safe destruction of legacy plasticisers from the plastics life cycle
- Recovery of valuable resources of plastic waste
- Reduction of greenhouse gas emissions
- Creation of new business opportunities within the circular value chain

Thank you for your attention!

For more information:

WEB

www.circular-flooring.eu



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in

[Circular Flooring – Pioneering Recycling Process for PVC Waste](#)

