Contact ISPT: klaartje.rietkerken@ispt.eu

CirBind

Scale-up of the Plantics-GX Bioresin Production Process to generate safe, strong and high impact circular binder applications

Project number	CS-20-05
Project leader(s)	Plantics
E-mail	info@plantics.com
Partners	EverUse, ISPT, KCPK, Koskisen, Millvision, Plantics, Stenden University of Applied Science, University of Amsterdam
Budget	1,846 k€
Duration	2018-2020

Why

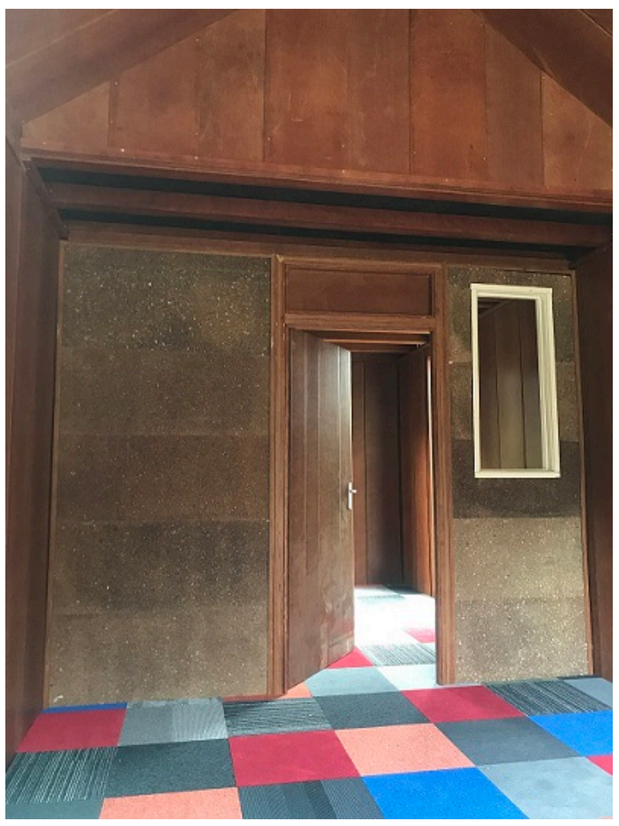
Existing thermoset binders are fossil based and not safe! For example, most wood panels contain formaldehyde-based thermoset binders while formaldehyde is toxic, carcinogenic, and a persistent pollutant.
The project builds on an invention of the University of Amsterdam (UvA) that has been further developed towards a strong, 100% biobased, recyclable, and safe biomaterial which potentially can replace most existing thermoset binders.
The material is unique as no bio-based alternative for thermoset binders is available in the market. The resulting biomaterial has a negative CO_2 footprint of around 1,1 kg CO_2/kg product and in case it enters the environment it is also biodegradable. Moreover, the raw materials needed are abundantly available and competitive.

Objective and Approach

Plantics B.V., a UvA spin-off, develops and commercializes applications of its biomaterial together with partners. In Cirbind, Plantics cooperates with knowledge and research institutes and (inter-) national end-users to develop 3 high impact binder applications, and to scale-up the production of Plantics-GX resins (GX) from lab-scale (kg/batch) to a 50-100 kg/batch.
Fundamental understanding of the chemistry of the polymerization for different formulations and the interaction with other materials is another aim.

Results

The project started summer 2018 and will continue until the end of 2020. By the autumn 2019 the GX-resin production has been upscaled to 50 kg/batch and a first version of a revolutionary new interior wall panel have been made and applied in a so-called Tiny House in Emmen (see photo's Biobased Woningbouw funded by Interreg). These panels are modular, 100% biobased, circular, and made with EverUse recycled paper insulations mats impregnated with GX resins. The panels are also safe (no toxic gases such as formaldehyde or radon, fire resistant), have excellent sound and thermal isolation, and contribute to a good climate control. Moreover, the labor costs are much lower compared to conventional systems due to a strongly reduced construction time.



In Cirbind also wood panels and panels with natural fibers (such as hemp) and GX resin have been made successfully on a 40*40 cm scale.

Institute for Sustainable Process Technology

This project is co-funded by TKI-E&I with the supplementary grant 'TKI- Toeslag' for Topconsortia for Knowledge and Innovation (TKI's) of the Ministry of Economic Affairs and Climate Policy.