

CIRCO



Rodenburg Biopolymers Bioplastics from potato starch

'The best use of bioplastics is in applications for which their biodegradability is key to the functioning of the product.'

- Aaik Rodenburg
Participant in the CIRCO Track



Challenge

Peeling and slicing potatoes to produce chips results in a by-product: starch. This residual flow serves as a raw material for the production of bioplastics by Rodenburg Biopolymers. Since the bioplastics are both bio-based and biodegradable, the material is suitable for unique applications.

Circular design strategy

The potato starch is combined with other sources of bioplastics. A range of material properties can derive from this combination, such as a different decomposition rate, strength and flexibility. The environmental impact of bioplastics is about twice as low as virgin alternatives based on petroleum. Rodenburg's portfolio currently comprises 15 bioplastics. After the bioplastic granulate is delivered to customers, they process it into finished products; for example, by injection-moulding, thermo-forming or blowing. Starting to incorporate bioplastics in production is easy for them, as the only change is the processing temperature. The material is biodegradable, so it can be used for unique applications. Autostix applies it to the cultivation of cuttings in horticulture, for example. Bese Elements uses the material for a 3D structure which allows vulnerable ecosystems to recover, such as an artificial reef to restore the growth of oysters in the sea. The plastics degrade into natural substances after about six years.

Circular business model

As a manufacturer of raw materials, Rodenburg sells the bioplastics directly to processors and end customers. Bioplastics often cost around twice as much as virgin plastics. This price prevents many companies from substituting virgin plastics with bioplastics. However, it may also save costs when applied correctly. An example is waste disposal, where the product degrades on its own and hence does not need to be removed.

Result & follow-up

Rodenburg concentrates on selling the material for applications in which its biodegradability is of added value. It also explores other applications such as packaging. In this context, how to organise the discarding phase is an obstacle. The limited volume of bioplastics on the current market means that there is not yet a discarding scenario for consumer waste in which the material can be processed properly.