

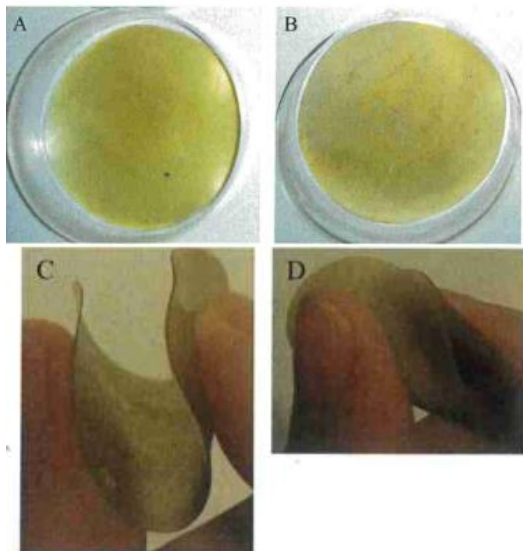
Material made from renewable aquatic raw materials

bioplastic, renewable raw materials, recyclable, composite materials

DESCRIPTION OF TECHNOLOGY

Electronics and plastic products have become an indispensable part of today's everyday life. However, poor levels of recyclability and increasingly scarce raw materials require new technologies and concepts.

The plastic-like material consists of an artificial biofilm, which is obtained from renewable aquatic raw materials or fishery waste. The biofilm is smooth, flexible and can be completely degraded. Properties such as flexibility, stability and colour can be modified according to requirements.



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For composite materials such as printed circuit boards, complete separation into metallic and natural components can be achieved by microbial recycling, allowing the reuse of the metallic component without loss of material and toxic chemicals.

APPLICATION FIELDS

As a composite product, for example, printed circuit boards & USB sticks.

Further applications, for example as floor coverings are to be tested.

AT A GLANCE ...

Application Fields

- Composite materials
- Electronics

Business

- Electronics e.g. printed circuit boards
- Consumer goods e.g. tableware or toys
- Packaging industry

USP

- Compostable & fully recyclable
- No agricultural land required
- Material properties adaptable
- In combination with metal - complete recovery of the metal component

Development Status

- TRL 3

Patent Status

Priority application will soon be filed at the German Patent and Trade Mark Office.

ADVANTAGES OVER THE PRIOR ART

- Fully compostable and environmentally friendly
- Complete decomposition into initial component when used as composite product e.g. in printed circuit boards
- Quick and flexible adaptation of the formulation according to desired flexibility, stability and colour
- No extra agricultural land required

STATE OF PRODUCT DEVELOPMENT

The biofilm shows a stability and durability of more than 18 months (at room temperature) and a high flexibility.

MARKET POTENTIAL

The high number of plastic products is countered by low recyclability and high amounts of waste. These not only pollute the oceans and ecosystems worldwide, but also promote resource scarcity.

Especially with composite materials (combination of plastic and metal), recycling rates are low and valuable metal components cannot be reused.

According to the Global E-waste Monitor 2020, 53.6 million tonnes of e-waste was produced globally in 2019. Of this, only 17.4% was recycled.

Instead of being reused, precious raw materials including gold, silver, copper, etc., worth approximately \$57 billion US dollars were dumped or incinerated.

COOPERATION OPPORTUNITIES

On behalf of Justus-Liebig-University Giessen, TransMIT GmbH is looking for cooperation partners or licensees worldwide.

Resource:

Forti, Vanessa, Balde, Cornelis P., Kuehr, Ruediger and Bel, Garam, *The Global E-waste Monitor 2020: Quantities, flows and the circular economy potential*, (Bonn, Geneva and Rotterdam: United Nations University/United Nations Institute for Training and Research, International Telecommunication Union, and International Solid Waste Association, 2020).
<https://ewastemonitor.info/gem-2020/>

A TECHNOLOGY OF



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