BINDEMITTEL AUF BASIS VON ÖLPFLANZENTRESTERN ZUR HERSTELLUNG VON HOLZ- UND VERBUNDWERKSTOFFEN

Ref-Nr: TA-BioC-2165-SUG

HINTERGRUND

By far the most commonly used binders for the production of wood-based composites are the so-called urea-formaldehyde (UF) resins. However, these are susceptible to hydrolysis and therefore the produced wood-based materials still emit formaldehyde even years after their production. Scientists at the University of Göttingen, Germany developed a biological binder based on oil plant residues for the production of composite materials. The new formaldehyde-free binder has excellent properties and could therefore replace existing binders in many applications.

PROBLEMSTELLUNG

Currently, mostly petroleum-based polycondensation urea-formaldehyde (UF) resins are used for the production of wood-based materials. With all the technological advantages of these resins, however, a decisive disadvantage remains, namely that these resins are basically susceptible to hydrolysis and therefore the wood-based materials produced still emit formaldehyde even years after their production. It is therefore necessary to provide alternative binders, in particular binders that are formaldehyde-free so that no or only insignificantly formaldehyde will be emitted after production of wood and composite materials.

LÖSUNG

Scientists at the University of Göttingen, Germany developed a biological binder based on oil plant residues for the production of composite materials. In addition, the invention also refers to a process for the preparation of binders containing further processed pomace of oil plants. The new formaldehyde-free binder has excellent properties and could therefore replace existing binders in many applications.

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ENTWICKLUNGSSTAND

Demonstrationsexemplar

CATEGORIES

//Chemie //Polymerchemie //Nahrungsmittel- und Naturstoffproduktion //Holztechnologie

panel thick-ness¶ (mm)¶	transverse tensile strength¶ (N/mm²)¶	flexural strength¶ (N/mm²)¶	elastic modulus¶ (N/mm²)¶	thickness swel-ling¶ (%)¶	formaldehyde emission¶ In mg/m² nach DIN EN 717-2¶
8¶	1,26¶	65,00¶	5540¶	14,0¶	0,17¶
10¶	1,05¶	62,00¶	5620¶	14,8¶	0,2¶
12¶	0,81¶	52,00¶	4852¶	16,2¶	0,15¶

Rapeseed pomace bound fibreboard (bulk density 800 kg/m³).

VORTEILE

- Bio-based binder for production of wood and composite materials.
- Products are formaldehyde-free or emit only insignificantly formaldehyde after production.
- Simple and fast manufacturing process of binder containing processed pomace of oil plants.
- Sustainable production due to use of waste products (byproducts) from plant oil production.

ANWENDUNGSBEREICHE

Production of of wood and composite materials using new bio-based binders that are formaldehyde-free or emit no or only insignificantly formaldehyde after production.