



BIO-BASED COATINGS & FINISHES

2020-05
CENTEXBEL-VKC INFO

Biodegradable omniphobic coatings, related articles, and related methods

Patent no: WO2020/041409

Date of publication: 2020-02-27

Applicant(s): MICHIGAN STATE UNIVERSITY

Inventor: RABNAWAZ MUHAMMAD, LI ZHAO

Abstract:

The disclosure relates to omniphobic coatings, related articles including such coatings, and related method for forming such coatings or articles, for example biobased and/or biodegradable omniphobic coatings. The omniphobic coating includes a reaction product between an amino-functional polymer and an amino-reactive functionalized omniphobic polymer having a glass transition temperature (T_g) of 60°C or less. The omniphobic coating has a weight ratio of amino-functional polymer relative to functionalized omniphobic polymer of at least 1 or 2. A corresponding omniphobic coated article can include the omniphobic coating on a porous substrate such as a cellulosic or paper substrate, for example to provide a water- and oil/fat/grease-resistant coating for a paper-based product. The omniphobic coating can be formed in a reaction medium before being applied to the substrate, or the omniphobic coating can be formed on the substrate with serial application of the amino-reactive functionalized omniphobic polymer and the amino-functional polymer thereon. This disclosure provides a closed loop circular economy approach for fluorine-free, water- and grease-resistant paper as the coating can be easily separated from the pulp/fiber of the paper. The recycled pulp can be used for paper making, while the separated coating in micelle form can be used for recoating.

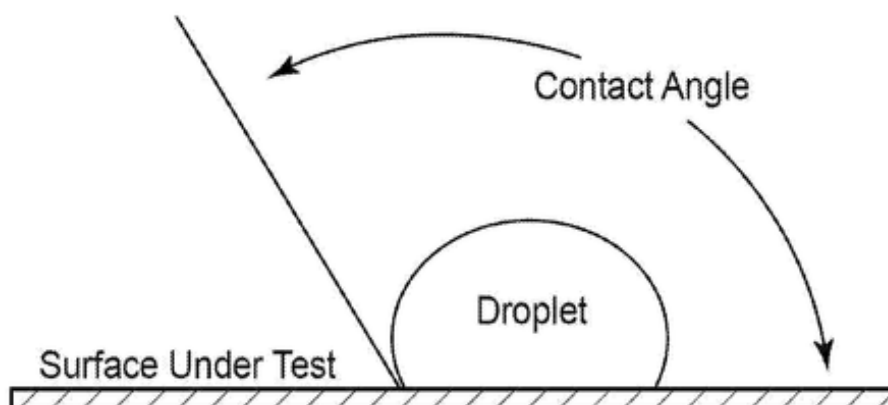


FIGURE 1

Method and devices for the production of products using lignocellulose-containing particles

Patent no: EP3626418

Date of publication: 2020-03-25

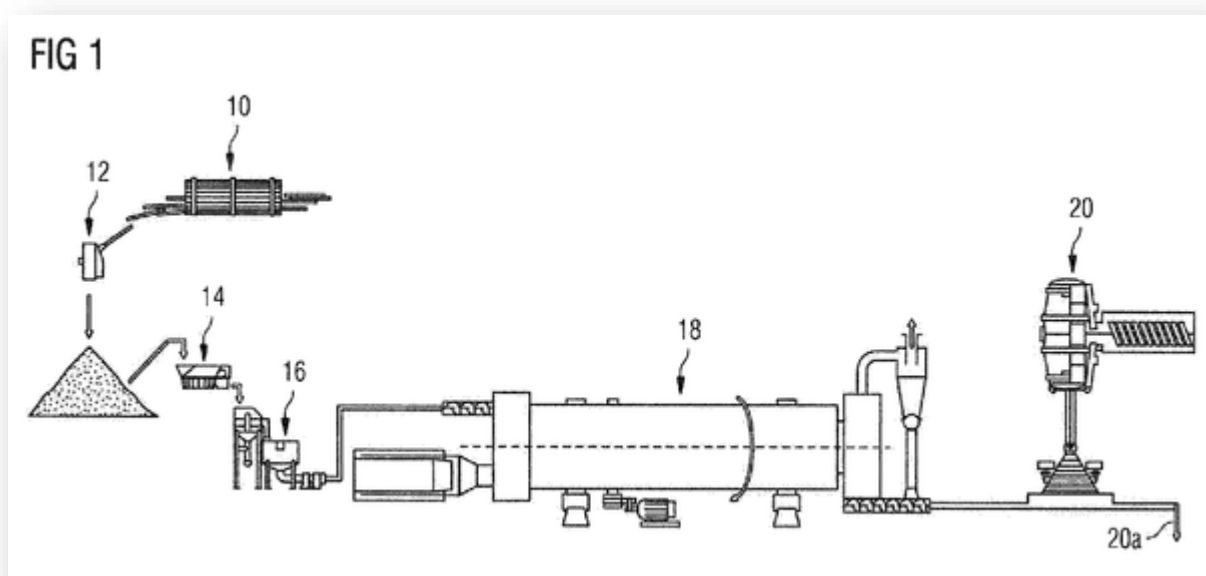
Applicant(s): POLYMERTREND

Inventor : ZAHER MAX, SCHWARZ WOLFGANG, PROF THOLE VOLKER

Abstract:

The invention relates to a method and devices for producing products (65) by using cellulose-containing particles, with which the following steps are carried out: • a) irradiating the particles with electrons in the energy range > 1 MeV; • b) mixing the irradiated particles with electron-beam-reactive powder of a synthetic polymer, in particular a thermoplastic, having powder particle sizes < 2000 micrometres and/or with a liquid electron-beam-reactive synthetic or bio-based polymer; • c) forming the mixture created in a way corresponding to the form of the product to be produced, in particular forming it into a nonwoven (56); • d) heating the formed mixture to $100 - 180^{\circ}\text{C}$; • e) pressing the formed mixture without heating; and • f) irradiating the pressed mixture with electrons in the energy range of 1 MeV to 10 MeV and also with appropriately chosen dosages and dosing rates.

(From WO2020058275 A1)



Sustainable polymer compositions and methods

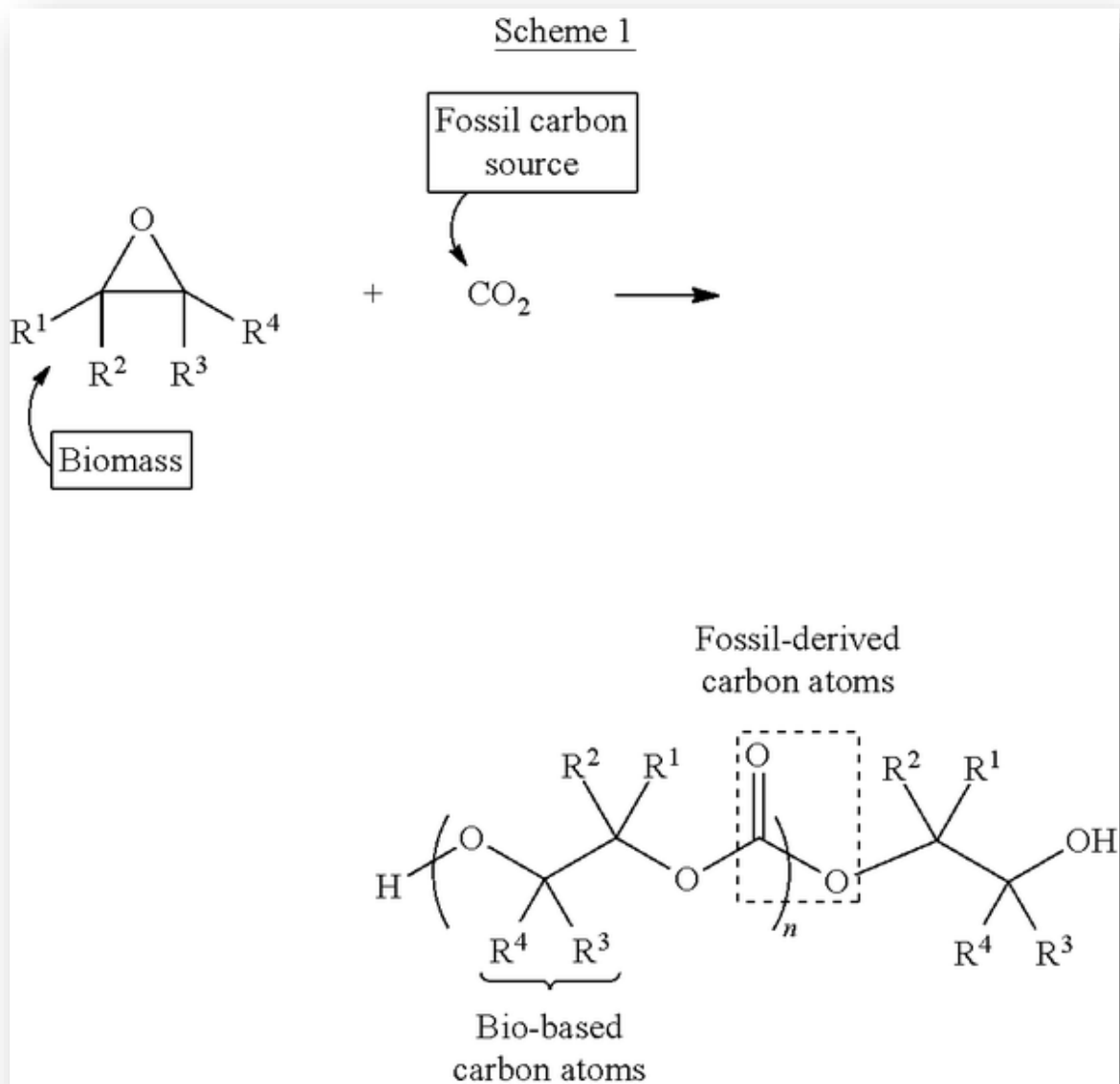
Patent no: US20200062900

Date of publication: 2020-02-06

Applicant(s): SAUDI ARAMCO

Inventor: FARMER JAY J

Abstract: In one aspect, the present invention encompasses compositions of sustainable polycarbonate polymers, methods of producing such polymers, and methods for evaluating whether certain constituents of a polymer chain are derived from biomass or a fossil carbon source.



Composite panel having a surface bio-source of controlled roughness and associated manufacturing precedes

Patent no: FR3084280

Date of publication: 2020-01-31

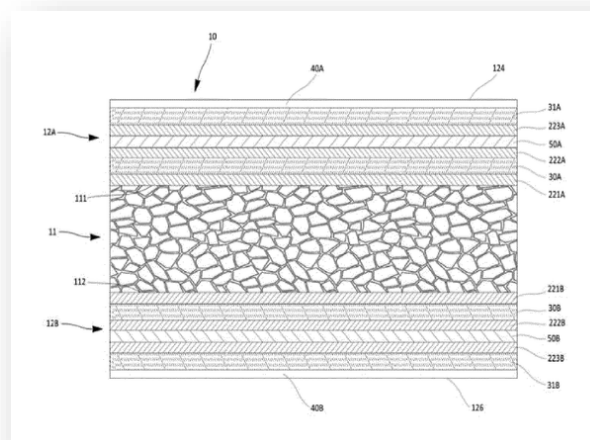
Applicant(s): KAIROS

Inventor : KHALFALLAH MOUSSA, GROSSMANN ERWAN

Abstract:

The present invention relates to composite panels (10) which can be sandwich-type panels and comprise at least one composite skin (12A, 12B), a core (11), said skin (12A, 12B) having at least two layers of a composite material (30A, 31A; 30B, 31B), and the composite material comprising at least one strengthening fibre of natural origin and a matrix of at least one biosourced polymer, characterized in that a1) the skin (12A, 12B) of said composite panel (10) further comprises, on its outer side, at least one layer of at least one biosourced, semi-crystalline, thermoplastic polymer (40A, 40B) having a crystallinity less than 20%; b1) said at least one layer of biosourced, semi-crystalline thermoplastic polymer (40A, 40B) has a surface finish without visible defects; c1) between the adjacent layers of composite material there are positioned layers comprising a sheet of cellulose material (50A, 50B) having a mass per unit area of between 20 g/m² et 250 g/m²; and/or d1) between two adjacent layers included in the skins (12A, 12B) of the composite panel, and between the core (11) and each of the skins (12A, 12B), there are positioned layers with a thickness of between 20 micrometers and 1 mm of at least one biosourced polymer (221A, 222A, 223A; 221B, 222B, 223B) that ensure that all of the layers adhere to each other and that the skins adhere to the spacer element.

(From WO2020025511 A1)



Adhesive tape

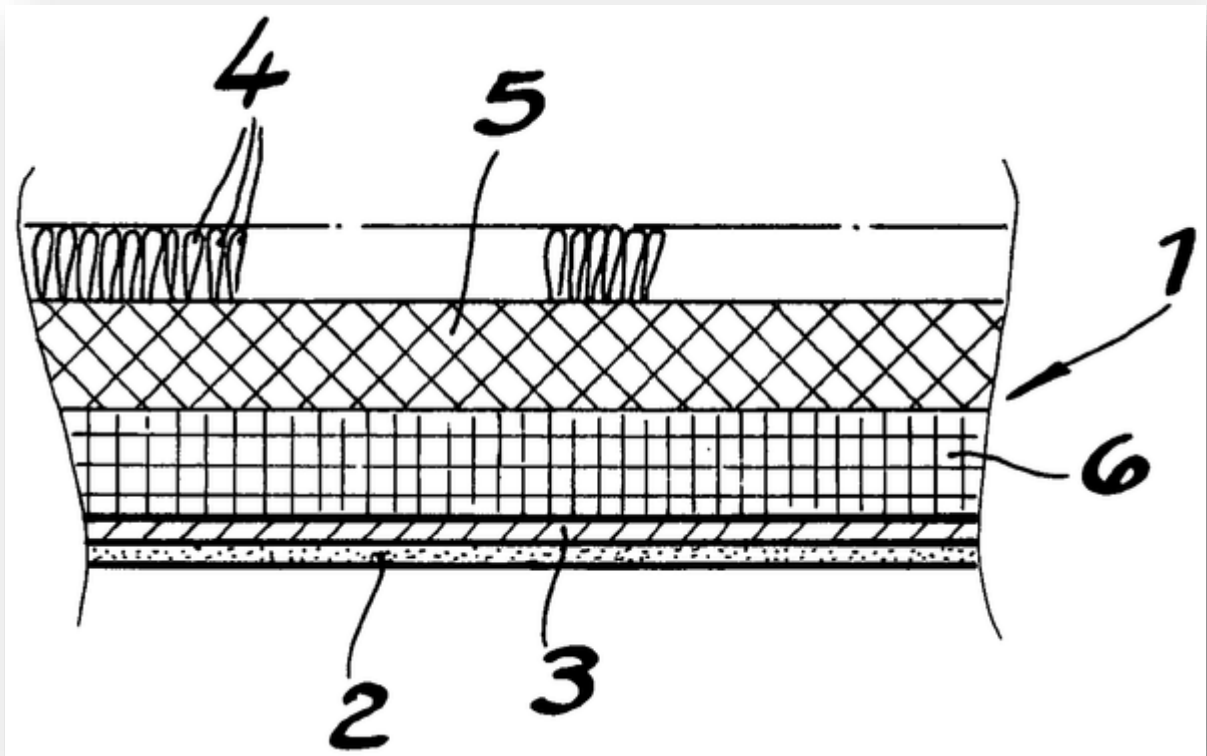
Patent no: DE202019105633

Date of publication: 2020-01-02

Applicant(s): CERTOPLAST TECHNISCHE KLEBEBAENDER

Abstract:

Adhesive tape, in particular a wrapping tape for wrapping cables in automobiles, with a predominantly textile substrate, - support both sides a and a, adhesive coating (2) applied to which the textile backing of or made bio-polymer fibers and/or polymer lines, characterized in, that the support as a suede carrier (1) or contains such a chip.



Lignin-based polyurethane prepolymers, polymers, related compositions, and related methods

Patent no: WO2019/241607

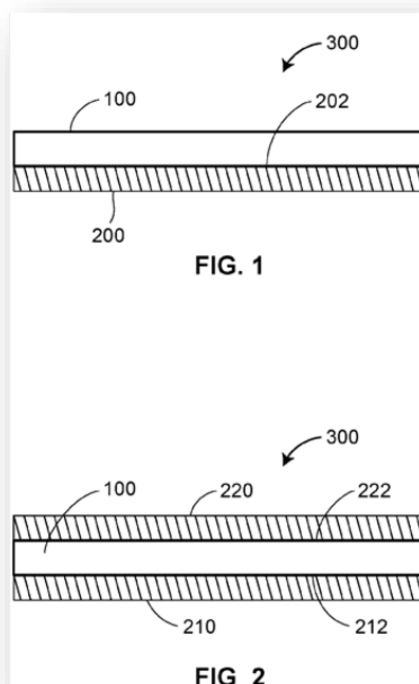
Date of publication: 2019-12-19

Applicant(s): MICHIGAN STATE UNIVERSITY

Inventor : NEJAD MOJGAN, NIKAFSHAR SAEID

Abstract:

The disclosure relates to a polyurethane prepolymer and corresponding crosslinked network polymer incorporating lignin as a natural polyol in the polyurethane system. The polyurethane prepolymer includes a reaction product between an isocyanate, lignin, and a cyclic alkyl carbonate. The reaction product includes (i) free isocyanate groups and/or free hydroxyl groups, (ii) urethane linking groups between residues of lignin aliphatic hydroxyl groups and the isocyanate, (iii) ester linking groups between residues of lignin aromatic hydroxyl groups and a ring-opened form of the cyclic alkyl carbonate, and (iv) optionally urethane linking groups between residues of the ring-opened cyclic alkyl carbonate and the isocyanate. The polyurethane polymer can be a networked, crosslinked polymerization product of the prepolymer reaction product, for example in combination with a lignin curing agent. The polyurethane polymer can be used as a coating on a substrate, an adhesive joining multiple substrates, etc.



Bio-based material with antibacterial effect and use thereof

Patent no: WO2019/213833

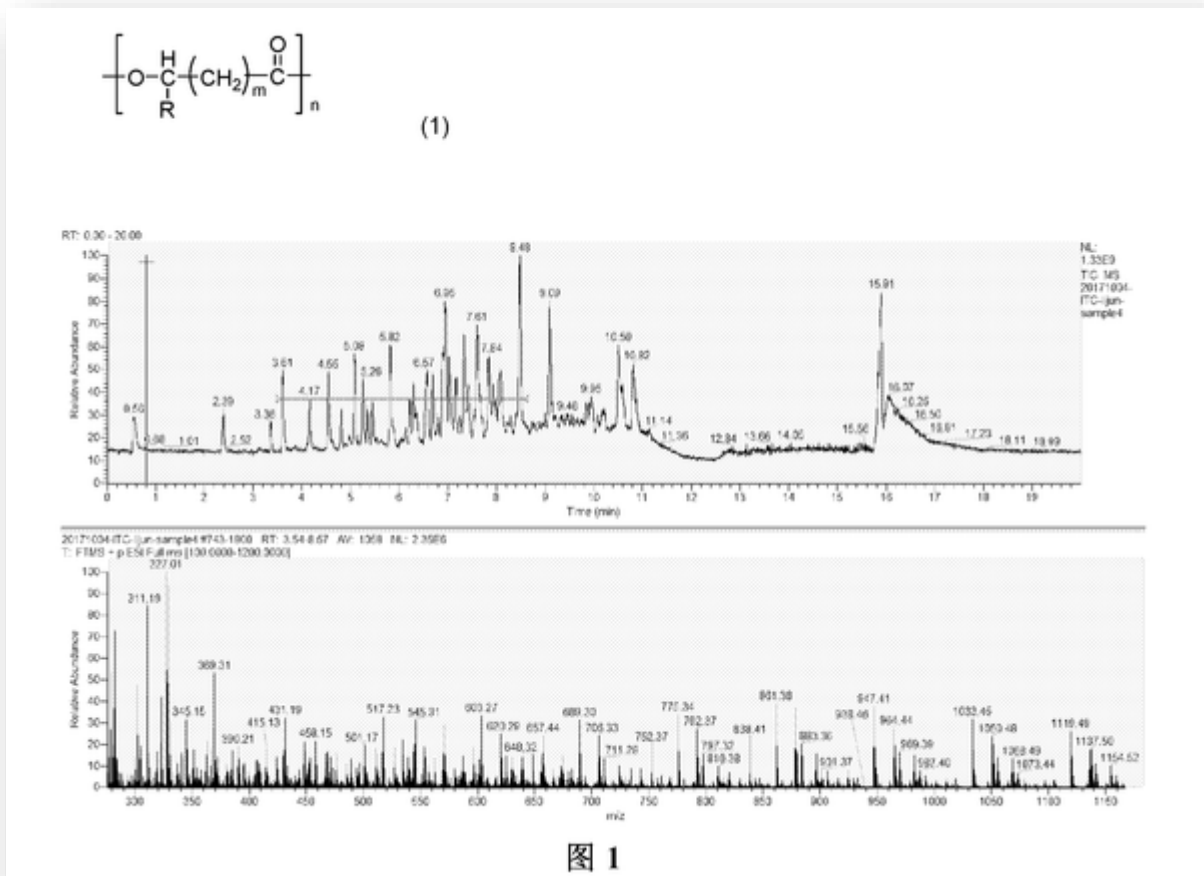
Date of publication: 2019-11-14

Applicant(s): HONG KONG RESEARCH INSTITUTE OF TEXTILES & APPAREL

Inventor : TAO XIAOMING, YANG XINGXING, ZHANG ZIHENG, LI JUN, LIU SHIRUI, MA LINLIN, FEI BIN, LEUNG HANG MEI

Abstract:

Provided is a bio-based material having an antibacterial effect, comprising a polymer represented by a formula (1) or a mixture of the polymer represented by the formula (1) and polyethylene glycol as an antibacterial active ingredient. The use of the bio-based material is also mentioned. The antibacterial bio-based material has excellent, stable and long-lasting antibacterial activity, and has remarkable antibacterial effects against various bacteria and fungi. The antibacterial bio-based material also has excellent biodegradability and biocompatibility, and bio-based products derived from microbial fermentation have high safety and are suitable for industrial production and large-scale use.



Biofiber film

Patent no: WO2019/165440

Date of publication: 2019-08-29

Applicant(s): STUART EARNEST DWICE

Inventor : STUART EARNEST

Abstract:

This invention provides a thin film plastic comprising high percentages of biomass microparticles, and methods to increase biomass percentage in thin film plastics while reducing resin and related additives in the thin film plastics.

