

Title (en)
METHOD FOR COATING CELLULOSIC MATERIAL

Title (de)
VERFAHREN ZUR BESCHICHTUNG VON ZELLULOSE MATERIAL

Title (fr)
MÉTHODE DE REVÊTEMENT D'UNE MATIÈRE CELLULOSIQUE

Publication
EP 4253651 A1 20231004 (EN)

Application
EP 23020166 A 20230331

Priority
PT 11789422 A 20220331

Abstract (en)
The present invention relates to a method for coating cellulose material with essential oils that allows retarding the evaporation of these essential oils from the surface of the cellulose material. These oils are added to the cellulose material to provide it with antimicrobial and antioxidant properties. The method described in this invention delays the release of the active compounds during drying and during exposure of the cellulosic material to air. The method disclosed herein comprises a chemical modification of a starch with a cyclodextrin, followed by dispersion of this modified starch at high temperatures, for finally being used in a coating step, together with the essential oil of interest. The method described herein does not require the use of surfactants or organic cosolvents to retard the evaporation of the essential oils added to the cellulosic material and according to its application.

IPC 8 full level
D21H 17/28 (2006.01); **D21H 19/20** (2006.01); **D21H 19/54** (2006.01); **D21H 21/36** (2006.01); **D21H 27/10** (2006.01)

CPC (source: EP PT)
D21H 17/28 (2013.01 - EP); **D21H 19/00** (2013.01 - PT); **D21H 19/20** (2013.01 - EP); **D21H 19/54** (2013.01 - EP); **D21H 21/36** (2013.01 - EP); **D21H 27/10** (2013.01 - EP)

Citation (applicant)
• CN 102644217 A 20120822 - HENGAN FUJIAN HOLDING GROUP CO, et al
• CN 109403142 A 20190301 - GUIZHOU WULIU CULTURAL TOURISM SPECIAL COMMODITY DEV CO LTD
• EP 0690170 A1 19960103 - AVEBE COOP VERKOOP PROD [NL]
• CN 111691224 A 20200922 - RISINGSTAR BIOTECHNOLOGY GUANGZHOU CO LTD
• TW 201102271 A 20110116 - CHUNG RHY SPECIAL PAPER MFG CO LTD [TW]
• A. ESPERTEF. VILAPLANAS. KARLSSON: "Comparison of water absorption in natural cellulosic fibres from wood and one-year crops in polypropylene composites and its influence on their mechanical properties", COMPOS. PART A APPL. SCI. MANUF., 2004
• Y. ECHEGOYENC. NERIN: "Performance of an active paper based on cinnamon essential oil in mushrooms quality", FOOD CHEM., vol. 170, March 2015 (2015-03-01), pages 30 - 36, XP029073176, DOI: 10.1016/j.foodchem.2014.08.032
• S. SHANKARJ. W. RHIM: "Antimicrobial wrapping paper coated with a ternary blend of carbohydrates (alginate, carboxymethyl cellulose, carrageenan) and grapefruit seed extract", CARBOHYDR. POLYM., 2018
• F. MURATORER. E. MARTINIS. E. BARBOSA: "Bioactive paper by eugenol grafting onto cellulose. Effect of reaction variables", FOOD PACKAG. SHELF LIFE, vol. 15, March 2018 (2018-03-01), pages 159 - 168, XP055875442, DOI: 10.1016/j.fpsl.2017.12.010
• I. KOSTOVA ET AL.: "Antimicrobial active packaging based on dill weed essential oil", CELLUL. CHEM. TECHNOL., vol. 54, 2020, pages 347 - 354
• H. LIMAM ET AL.: "Variation in chemical profile of leaves essential oils from thirteen Tunisian Eucalyptus species and evaluation of their antioxidant and antibacterial properties", IND. CROPS PROD., vol. 158, December 2020 (2020-12-01), pages 112964
• G. KNOTHEL. F. RAZONM. E. G. DE CASTRO: "Fatty acids, triterpenes and cycloalkanes in ficus seed oils", PLANT PHYSIOL. BIOCHEM., vol. 135, February 2019 (2019-02-01), pages 127 - 131
• H. J. M. GIJSENJ. B. P. A. WIJNBERGA. DE GROOT: "Fortschritte der Chemie organischer Naturstoffe / Progress in the Chemistry of Organic Natural Products", 1995, SPRINGER, article "Structure, Occurrence, Biosynthesis, Biological Activity, Synthesis, and Chemistry of Aromadendrane Sesquiterpenoids", pages: 149 - 193

Citation (search report)
• [Y] WO 0148025 A1 20010705 - KIMBERLY CLARK CO [US]
• [Y] CN 109293789 A 20190201 - UNIV TIANJIN POLYTECHNIC
• [YD] CN 109403142 A 20190301 - GUIZHOU WULIU CULTURAL TOURISM SPECIAL COMMODITY DEV CO LTD
• [A] CN 110055820 A 20190726 - UNIV ZHEJIANG TECHNOLOGY
• [A] WO 2021090190 A1 20210514 - STORA ENSO OYJ [FI]
• [A] WO 2013173434 A1 20131121 - MANTROSE HAEUSER CO INC [US]

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA

Designated validation state (EPC)
KH MA MD TN

DOCDB simple family (publication)
EP 4253651 A1 20231004; PT 117894 A 20231002

DOCDB simple family (application)
EP 23020166 A 20230331; PT 11789422 A 20220331