

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization

International Bureau

(43) International Publication Date
13 January 2022 (13.01.2022)



(10) International Publication Number
WO 2022/008516 A1

(51) International Patent Classification:

C08J 3/18 (2006.01) C08K 5/3412 (2006.01)

C08K 5/053 (2006.01) C08L 29/04 (2006.01)

NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW,
SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(21) International Application Number:

PCT/EP2021/068674

(22) International Filing Date:

06 July 2021 (06.07.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

20184345.5 06 July 2020 (06.07.2020) EP

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(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,

GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

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(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN,
KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO,

(54) Title: METHOD FOR MANUFACTURE OF A PLASTICISED POLYVINYL ALCOHOL MIXTURE

(57) **Abstract:** A method for the manufacture of a plasticised polyvinyl alcohol polymer mixture comprising the steps of: introducing into a mixing reactor a polyvinyl alcohol polymer comprising homopolymeric polyvinyl alcohol or a blend thereof having a degree of hydrolysis in the range of 93% to 98% or more; wherein the mixing reactor comprises a blending chamber having a primary inlet, a primary outlet and at least two inter-engaging components extending between the primary inlet and primary outlet, the components being arranged to apply a shearing force to the polymer while the polymer is conveyed by the components from the inlet through a reaction zone to the outlet; one or more secondary inlets located downstream from the primary inlet for introducing reactants comprising a processing aid and a plasticiser to the chamber to form a reaction mixture; wherein the plasticiser is selected from the group consisting of the following compounds and mixtures thereof: (a) sugar alcohols selected from the group consisting of: diglycerol, triglycerol, fructose, ribose, xylose, D-mannitol, triacetin, and mixtures thereof; polyols selected from the group consisting of: pentaerythritol, dipentaerythritol, and mixtures thereof; (b) diols selected from the group consisting of: methyl pentanediol, 1,2-propanediol, 1,4-butanediol, 2-hydroxy-1,3-propanediol, 3-methyl-1,3-butanediol, 3,3-dimethyl-1,2-butanediol, and mixtures thereof; (c) glycols selected from the group consisting of: polyethylene glycol 300, polyethylene glycol 400, alkoxyated polyethylene glycol, and mixtures thereof; (d) caprolactam, tricyclic trimethylolpropane formal, rosin esters, eucamide, and mixtures thereof; wherein the blending chamber comprises a plurality of heated regions arranged so that the mixture is subjected to a temperature profile whereby the temperature increases from the inlet to the outlet; a secondary outlet located between the reaction zone and primary outlet arranged to allow removal of processing aid from the chamber; reacting the processing agent, plasticiser and polymer in the reaction zone to form plasticised polymer; and allowing the plasticised polymer to pass from the primary outlet.



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