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International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶: B01J 31/20, C07C 45/58, 47/19, 29/16, 31/20	A1	(11) International Publication Number: WO 97/16250 (43) International Publication Date: 9 May 1997 (09.05.97)
(21) International Application Number: PCT/EP96/04700 (22) International Filing Date: 28 October 1996 (28.10.96) (30) Priority Data: 08/550,589 31 October 1995 (31.10.95) US (71) Applicant (for all designated States except CA): SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V. [NL/NL]; Carel van Bylandtlaan 30, NL-2596 HR The Hague (NL). (71) Applicant (for CA only): SHELL CANADA LIMITED [CA/CA]; 400 - 4th Avenue S.W., Calgary, Alberta T2P 2H5 (CA). (72) Inventors: LAM, Khiet, Thanh; 6819 La Violetta Drive, Houston, TX 77083 (US). POWELL, Joseph, Brown; 10506 Normont Drive, Houston, TX 77070 (US). WEIDER, Paul, Richard; 15014 Tramore, Houston, TX 77083 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: PROCESS FOR PREPARING 1,3-PROPANEDIOL (57) Abstract A process for preparing 1,3-propanediol comprises the steps of: (a) reacting a cobalt salt selected from at least one of cobalt hydroxide, cobalt (II, III) oxide and cobalt carbonate with synthesis gas in an essentially non-water-miscible liquid medium under conditions effective to produce a cobalt carbonyl reaction product comprising at least one active cobalt carbonyl hydroformylation catalyst species; (b) contacting ethylene oxide with synthesis gas in an essentially non-water-miscible liquid medium in the presence of a catalytic amount of the cobalt carbonyl reaction product mixture and an effective amount of a catalyst promoter under reaction conditions effective to produce an intermediate product mixture comprising less than 15 wt.% 3-hydroxypropanal; (c) adding an aqueous liquid to said intermediate product mixture and extracting into said aqueous liquid a major portion of the 3-hydroxypropanal so as to provide an aqueous phase comprising 3-hydroxypropanal in greater concentration than the concentration of 3-hydroxypropanal in the intermediate product mixture, and an organic phase comprising a major portion of the cobalt carbonyl; (d) separating the aqueous phase from the organic phase; (e) returning at least a major portion of the organic phase to the process of step (b); (f) contacting the aqueous phase comprising 3-hydroxypropanal with hydrogen in the presence of a hydrogenation catalyst under hydrogenation conditions to provide a hydrogenation product mixture comprising 1,3-propanediol; and (g) recovering 1,3-propanediol from the hydrogenation product mixture.		