

15 OCT 2003

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

**(19) World Intellectual Property Organization
International Bureau**



(43) International Publication Date
5 December 2002 (05.12.2002)

(10) International Publication Number
WO 02/096848 A3

PCT

- (51) **International Patent Classification⁷:** C07C 45/50, 45/79

(21) **International Application Number:** PCT/GB02/02510

(22) **International Filing Date:** 29 May 2002 (29.05.2002)

(25) **Filing Language:** English

(26) **Publication Language:** English

(30) **Priority Data:**
0113080.6 30 May 2001 (30.05.2001) GB

(71) **Applicant (for all designated States except US):** DAVY PROCESS TECHNOLOGY LIMITED [GB/GB]; 20 Eastbourne Terrace, London W2 6LE (GB).

(72) **Inventors; and**

(75) **Inventors/Applicants (for US only):** BANISTER, James, Andrew [GB/GB]; 6 Beech Crest, Durham DH1 4QF (GB). HARRISON, George, Edwin [GB/GB]; 15 West Park Avenue, Billericay, Essex CM12 9EE (GB).

(74) **Agents:** SMAGGASGALE, Gillian, Helen et al.; W.P. Thompson & Co., Celcon House, 289-293 High Holborn, London WC1V 7HU (GB).

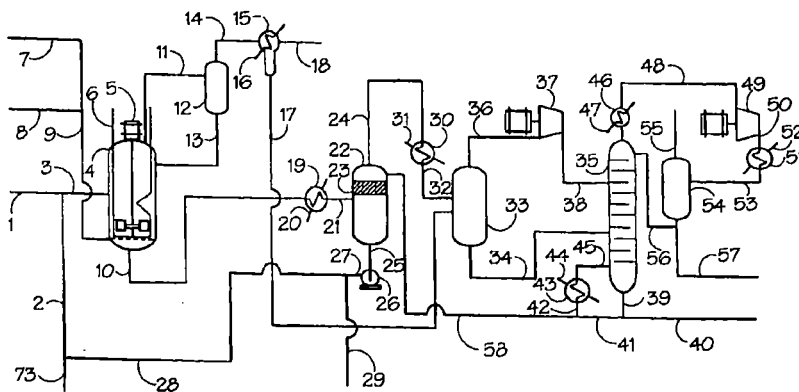
(81) **Designated States (national):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) **Designated States (regional):** ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

[Continued on next page]

(54) Title: HYDROFORMYLATION PROCESS



(57) Abstract: The present invention relates to a continuous hydroformylation process for the production of an aldehyde by hydroformylation of an olefin which comprises: providing a hydroformylation zone containing a charge of a liquid reaction medium having dissolved therein a rhodium hydroformylation catalyst comprising rhodium in combination with carbon monoxide and a ligand; supplying the olefin to the hydroformylation zone; maintaining temperature and pressure conditions in the hydroformylation zone conducive to hydroformylation of the olefin; recovering from the liquid hydroformylation medium a hydroformylation product comprising aldehyde; recovering from the hydroformylation zone a stream comprising the rhodium catalyst; contacting at least a portion of the stream with a solid acidic absorbent under process conditions which allow at least some of the rhodium to become bound to the absorbent; subjecting the rhodium bound to the absorbent, under process conditions which allow desorption of the metal, to a fluid stripping medium comprising hydrogen and solvent; recovering the rhodium hydride catalyst; and recycling the rhodium hydride catalyst to the hydroformylation zone.



162162



ACTION

WO 02/096848 A3