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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶: C07C 27/20, 51/14, 67/38, B01J 23/24, 27/132, 27/24, 27/188		A1	(11) International Publication Number: WO 96/19427
			(43) International Publication Date: 27 June 1996 (27.06.96)
(21) International Application Number: PCT/US95/16438			(81) Designated States: CA, CN, JP, KR, MX, RU, SG, UA, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).
(22) International Filing Date: 15 December 1995 (15.12.95)			
(30) Priority Data: 08/359,178 19 December 1994 (19.12.94) US 08/509,039 28 July 1995 (28.07.95) US			
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(54) Title: CARBONYLATION OF OLEFINS**(57) Abstract**

Disclosed is a process for the preparation of aliphatic carbonyl compounds selected from aliphatic carboxylic acids, alkyl esters of aliphatic carboxylic acids and anhydrides of aliphatic carboxylic acids by the carbonylation of olefins in the presence of a catalyst system comprising (1) a primary component selected from at least one Group 6 metal, i.e., chromium, molybdenum, and/or tungsten and (2) a secondary component selected from at least one of certain halides and tertiary and quaternary compounds of a Group 15 element, i.e., nitrogen, phosphorus and/or arsenic. The process is carried out in the absence of metals of groups 8, 9, and 10 (Fe, Rn, Os, Co, Rh, In, Ni, Pd, and Pt) and of formic acids and format esters. The process constitutes an improvement over known processes since it can be carried out at moderate carbonylation conditions without the necessity of using an expensive noble metal catalyst, volatile, toxic materials such as nickel tetracarbonyl, formic acid or a formate ester.

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