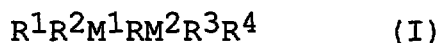


A B S T R A C T

HYDROFORMYLATION PROCESS

A process for the hydroformylation of ethylenically unsaturated compounds with carbon monoxide and hydrogen in the presence of a catalyst system comprising

- a) a source of palladium, platinum, or nickel cations;
- b) a source of anions, other than halide anions;
- c) a source of at least one bidentate ligands of the formula



wherein M^1 and M^2 independently represent a phosphorus, arsenic or antimony atom, R represents a bivalent bridging group containing from 1-4 atoms in the bridge, R^1 and R^2 together represent a bivalent substituted or unsubstituted cyclic group whereby the two free valencies are linked to M^1 , and R^3 and R^4 independently represent a substituted or unsubstituted hydrocarbyl group, or together represent a bivalent substituted or unsubstituted cyclic group whereby the two free valencies are linked to M^2 ; and optionally

- d) a promoter;

wherein the catalyst system is chosen such that - when a)-c), taken in molecular ratios of 1:2:1, are slurried at ambient temperature and atmospheric pressure with a liquid mixture of the unsaturated compound feed and hydroformylated product taken in a volume ratio of 2:1 - said catalyst system is soluble to an amount of at least 2×10^{-4} mole of the cation a) per litre of said liquid mixture;

and wherein the hydroformylation reaction products are separated from the catalyst system in a solventless evaporative separator.

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