Claims

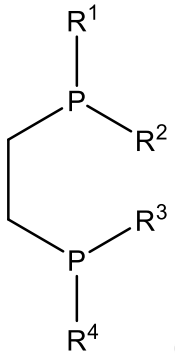
1. A process comprising the process steps of:

a) adding an olefin;

b) adding a cobalt precatalyst,

wherein the cobalt precatalyst is $[Co(acac)(C_4H_8O_2)_4]^+[BF_4]^-$ (**V1**);

c) adding a ligand (L) having the structure (**I**):



(**I**),

where R^1, R^2, R^3, R^4 are selected from:

-H, -(C_1-C_{12})-alkyl, -(C_6-C_{20})-aryl;

wherein the ligand is added in a molar ratio to cobalt of L/Co = < 0.95/1;

d) supplying of syngas;

e) heating the reaction mixture from a) to d), to convert the olefin into an aldehyde.

2. The process according to Claim 1,

where R^1, R^2, R^3, R^4 are selected from: -(C_1-C_{12})-alkyl, -(C_6-C_{20})-aryl.

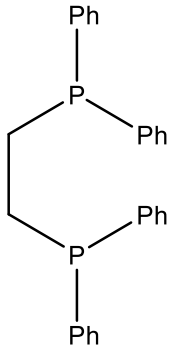
3. The process according to either of Claims 1 and 2,

where R^1, R^2 are -Ph.

4. The process according to any of Claims 1 to 3,

where R^1, R^3 are -Ph.

5. The process according to any of Claims 1 to 4,
where the ligand has the structure (**1**):



(**1**).

6. The process according to any of Claims 1 to 5,
wherein the ligand is added in a molar ratio to cobalt of L/Co = < 0.90/1.

7. The process according to any of Claims 1 to 6,
wherein the ligand is added in a molar ratio to cobalt of L/Co = < 0.80/1.

8. The process according to any of Claims 1 to 7,
wherein the Co precatalyst is initially charged in the form of a solution.

9. The process according to Claim 8,
wherein the olefin is added to the initially charged Co precatalyst solution.

10. The process according to any of Claims 1 to 9,
wherein the syngas is supplied in process step d) at a pressure within a range from 1 to 8 MPa (10 to 80 bar).

11. The process according to any of Claims 1 to 10,
wherein the heating of the reaction mixture in process step e) is to a temperature within a range from 80°C to 180°C.

12. The process according to any of Claims 1 to 11,
wherein the olefin is selected from:
ethene, propene, 1-butene, cis-2-butene, trans-2-butene, mixture of cis- and trans-2-butene, raffinate 1, raffinate 2, isobutene, 1-pentene, 2-pentene, 2-methyl-1-butene, 2-methyl-2-butene, 1-methylcyclohexene, tetramethylethene, 1-octene, 2-octenes, cyclooctene, di-n-butene, diisobutene, undecenes, dodecenes, triisobutene, tri-n-butene.