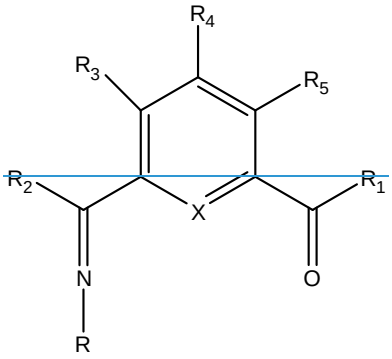
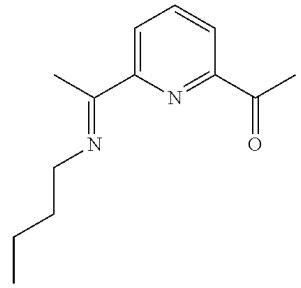
Claims

1. A catalyst component for olefin polymerization, comprising magnesium, titanium, halogen, and an internal electron donor, wherein the internal electron donor comprises an imine compound ~~with~~having a ketone group selected from~~as shown in Formula I;~~

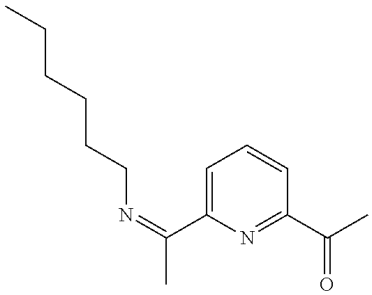


~~Formula I~~

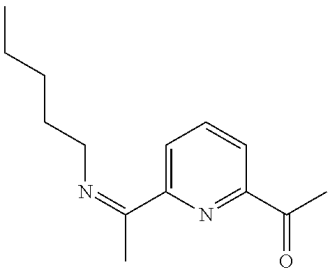
~~wherein in Formula I, R is selected from a group consisting of hydroxyl, C_1-C_{20} alkyl with or without a halogen atom substitute, C_2-C_{20}alkenyl with or without a halogen atom substitute group, and C_6-C_{30} aryl with or without a halogen atom substitute group; R_1-R_5may be identical to or different from each other, each independently selected from a group consisting of hydrogen, C_1-C_{20} alkyl, C_2-C_{20}alkenyl, C_6-C_{30}arylalkyl, C_6-C_{30}alkylaryl, C_9-C_{40} fused aryl, halogen atoms, hydroxyland C_1-C_{20}alkoxy; X is selected from a group consisting of halogen, nitrogen, oxygen, phosphorus, siliconheteroatoms,substituted or unsubstituted alkyl, C_5-C_{20}cycloalkyl, C_6-C_{30}aryl, and C_9-C_{40}fused aryl~~



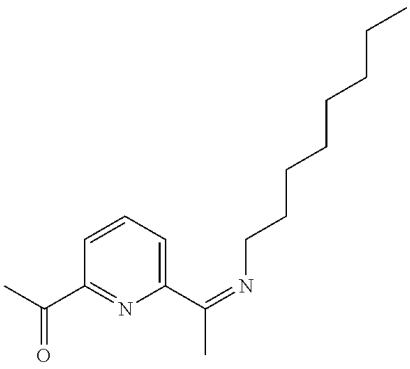
6-(butylimino)ethyl-2-acetylpyridine,



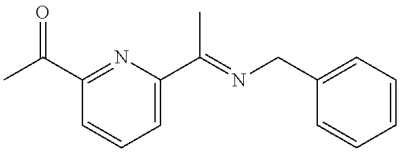
6-(hexylimino)ethyl-2-acetylpyridine,



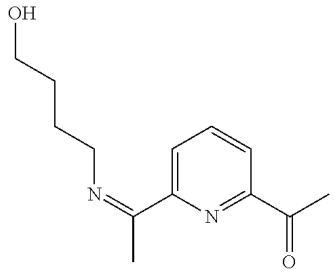
6-(pentylimino)ethyl-2-acetylpyridine,



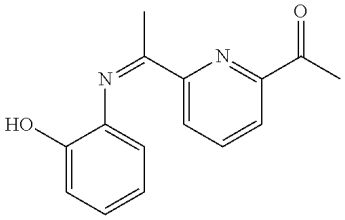
6-(octylimino)ethyl-2-acetylpyridine,



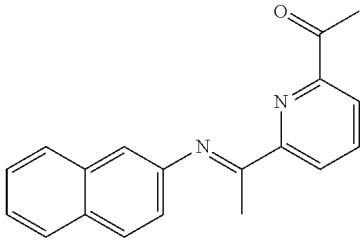
6-(benzylimino)ethyl-2-acetylpyridine,



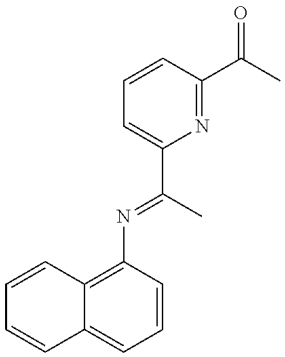
6-(4-hydroxy butylimino)ethyl-2-acetylpyridine,



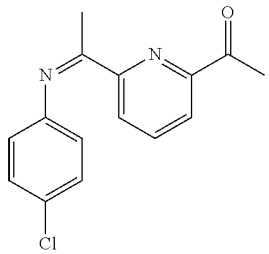
6-(2-hydroxy phenylimino)ethyl-2-acetylpyridine,



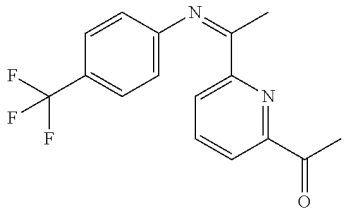
6-(2-naphthylimino)ethyl-2-acetylpyridine,



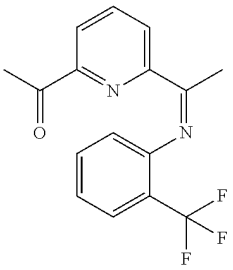
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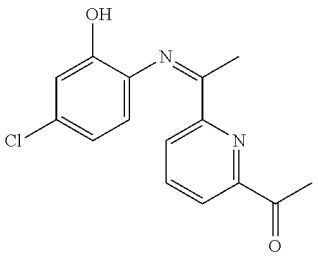
6-(4-chlorophenylimino)ethyl-2-acetylpyridine,



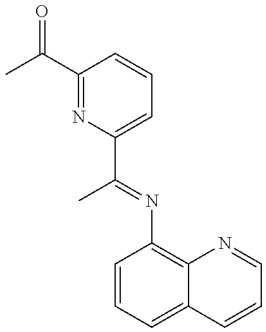
6-(4-trifluoromethylphenylimino)ethyl-2-acetylpyridine,



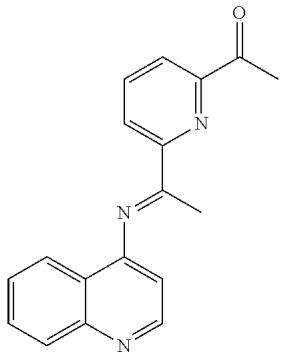
6-(2-trifluoromethylphenylimino)ethyl-2-acetylpyridine,



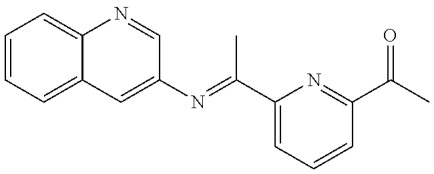
6-(2-hydroxy -4-chlorophenylimino)ethyl-2-acetylpyridine,



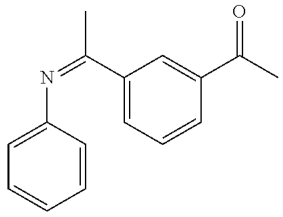
6-(8-quinolylimino)ethyl-2-acetylpyridine,



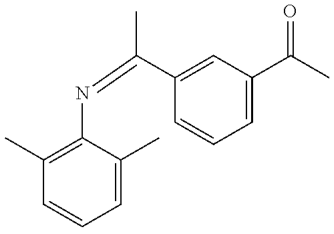
6-(4-quinolylimino)ethyl-2-acetylpyridine,



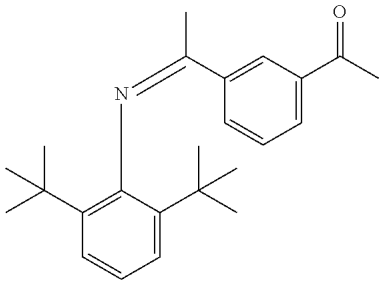
6-(3-quinolylimino)ethyl-2-acetylpyridine,



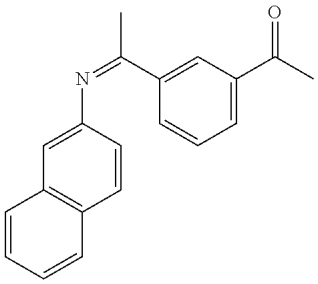
3-(phenylimino)ethylacetophenone,



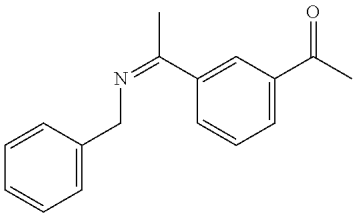
3-(2,6-dimethylphenylimino)ethylacetophenone,



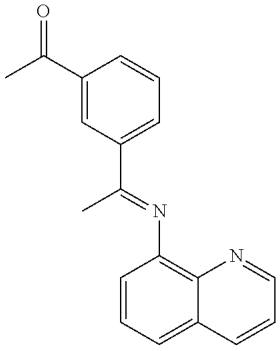
3-(2,6-diisopropylphenylimino)ethylacetophenone,



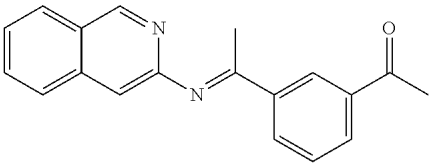
3-(2-naphthylimino)ethylacetophenone,



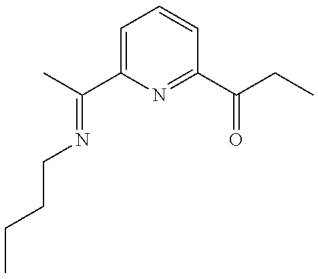
3-(benzylimino)ethylacetophenone,



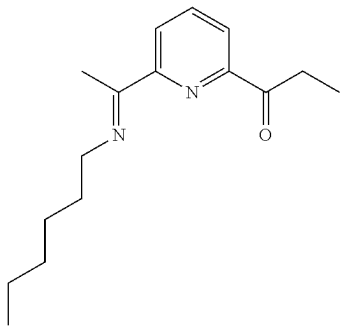
3-(8-quinolylimino)ethylacetophenone,



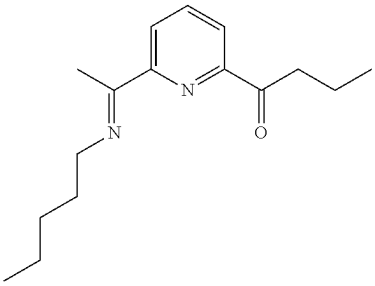
3-(2-quinolylimino)ethylacetophenone,



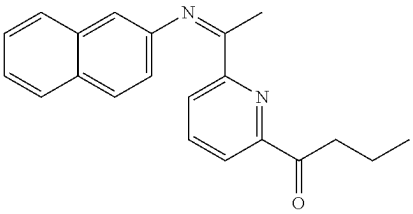
6-(butylimino)ethyl-2-propionylpyridine,



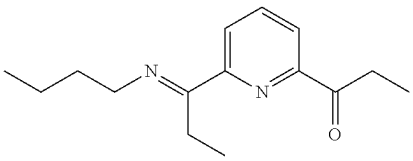
6-(hexylimino)ethyl-2-propionylpyridine,



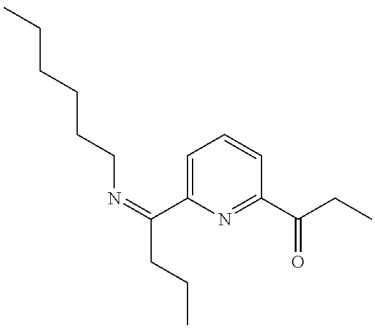
6-(pentylimino)ethyl-2-butyrylpyridine,



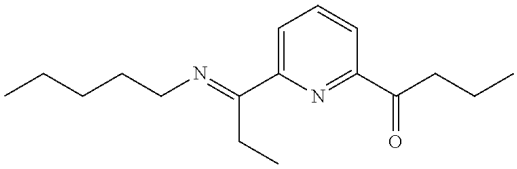
6-(2-naphthylimino)ethpyl-2-butyrylpyridine,



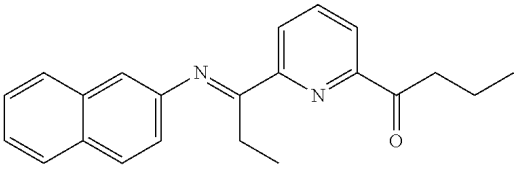
6-(butylimino)propyl-2-propionylpyridine,



6-(hexylimino)butyl-2-propionylpyridine,



6-(pentylimino)propyl-2-butyrylpyridine, and



6-(2-naphthylimino)propyl-2-butyrylpyridine.

2. The catalyst component according to claim 1, wherein based on the weight of the catalyst component, a content of magnesium is in a range of 5wt%-50wt%, a content of titanium is in a range of 1.0 wt%-8.0wt%, a content of halogen is in a range of 10 wt%-70 wt%, and a content of the internal electron donor is in a range of 0.1 wt%-20 wt%.

~~3. The catalyst component according to claim 1 or 2, wherein R is methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, sec-butyl, tert-butyl, pentyl, hexyl, hydroxyalkyl, phenyl, halogenated phenyl, alkyl-substituted phenyl, naphthyl, biphenyl, or a heterocycle-containing group; the heterocycle-containing group is preferably a pyrrole-containing group, a pyridine-containing group, a pyrimidine-containing group, or a quinoline-containing group.~~

~~4. The catalyst component according to any one of claims 1 to 3, wherein each of R_3-R_5 is independently selected from a group consisting of hydrogen, methyl, ethyl, n-propyl, isopropyl, n-butyl, tert-butyl, and isobutyl.~~

~~5. The catalyst component according to any one of claims 1 to 4, wherein X is nitrogen atom or CH.~~

6. The catalyst component according to any one of claims 1 to 5, wherein the imine compound with a ketone group as shown in Formula I is one or more selected from a group consisting of 6-(butylimino)ethyl-2-acetylpyridine, 6-(hexylimino)ethyl-2-acetylpyridine, 6-(pentylimino)ethyl-2-acetylpyridine, 6-(octylimino)ethyl-2-acetylpyridine, 6-(benzylimino)ethyl-2-acetylpyridine, 6-(4-hydroxy butylimino)ethyl-2-acetylpyridine, 6-(2-hydroxy phenylimino)ethyl-2-acetylpyridine,
6-(2,6-dimethylphenylimino)ethyl-2-acetylpyridine,
6-(2,6-diisopropylphenylimino)ethyl-2-acetylpyridine,
6-(phenylimino)ethyl-2-acetylpyridine,
6-(2-naphthylimino)ethyl-2-acetylpyridine,
6-(1-naphthylimino)ethyl-2-acetylpyridine,
6-(4-chlorophenylimino)ethyl-2-acetylpyridine,
6-(4-trifluoromethylphenylimino)ethyl-2-acetylpyridine,
6-(2-trifluoromethylphenylimino)ethyl-2-acetylpyridine, 6-(2-hydroxy -4-chlorophenylimino)ethyl-2-acetylpyridine,
6-(8-quinolylimino)ethyl-2-acetylpyridine,
6-(4-quinolylimino)ethyl-2-acetylpyridine,
6-(3-quinolylimino)ethyl-2-acetylpyridine, 6-(2,4,6-trimethylphenylimino)ethyl-2-acetylpyridine,
6-(2-ethylphenylimino)ethyl-2-acetylpyridine,
6-(4-ethylphenylimino)ethyl-2-acetylpyridine,
6-(2-propylphenylimino)ethyl-2-acetylpyridine,
6-(4-propylphenylimino)ethyl-2-acetylpyridine,
6-(3-propylphenylimino)ethyl-2-acetylpyridine,
6-(2-butylphenylimino)ethyl-2-acetylpyridine,
6-(4-butylphenylimino)ethyl-2-acetylpyridine, 3-(phenylimino)ethylacetophenone,
3-(2,6-dimethylphenylimino)ethylacetophenone,
3-(2,6-diisopropylphenylimino)ethylacetophenone,
3-(2-naphthylimino)ethylacetophenone, 3-(benzylimino)ethylacetophenone,
3-(8-quinolylimino)ethylacetophenone, 3-(2-quinolylimino)ethylacetophenone,

~~6-(butylimino)ethyl-2-propionylpyridine,~~

~~6-(hexylimino)ethyl-2-propionylpyridine,~~

~~6-(2,6-dimethylphenylimino)ethyl-2-propionylpyridine,~~

~~6-(2,6-diisopropylphenylimino)ethyl-2-propionylpyridine,~~

~~6-(phenylimino)ethyl-2-propionylpyridine,~~

~~6-(pentylimino)ethyl-2-butyrylpyridine,~~

~~6-(2-naphthylimino)ethyl-2-butyrylpyridine,~~

~~6-(butylimino)propyl-2-propionylpyridine,~~

~~6-(hexylimino)butyl-2-propionylpyridine,~~

~~6-(2,6-dimethylphenylimino)propyl-2-propionylpyridine,~~

~~6-(2,6-diisopropylphenylimino)propyl-2-propionylpyridine,~~

~~6-(phenylimino)propyl-2-propionylpyridine,~~

~~6-(pentylimino)propyl-2-butyrylpyridine, and~~

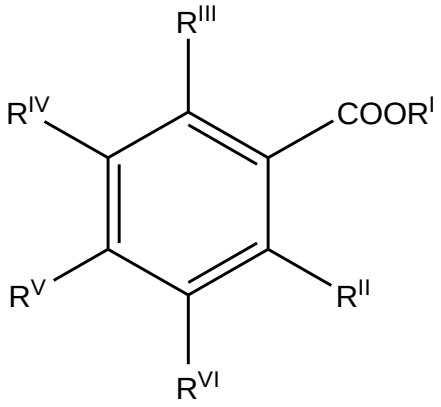
~~6-(2-naphthylimino)propyl-2-butyrylpyridine.~~

~~7~~3. The catalyst component according to any one of claim~~s~~ 1 ~~to 6~~, wherein the internal electron donor further comprises at least one additional electron donor compound, which is one, two, or three selected from the group consisting of aromatic carboxylate ester compounds, diol ester compounds, and diether compounds.

~~8~~4. The catalyst component according to claim ~~7~~3, wherein a molar ratio of the imine compound having~~with~~ a ketone group ~~as shown in Formula I~~ to the additional electron donor compound is in a range of 1:(0.05-20)~~, preferably in a range of 1:(0.1-10)~~.

5. The catalyst component according to claim 4, wherein the molar ratio of the imine compound having a ketone group to the additional electron donor compound is in a range of 1:(0.1-10).

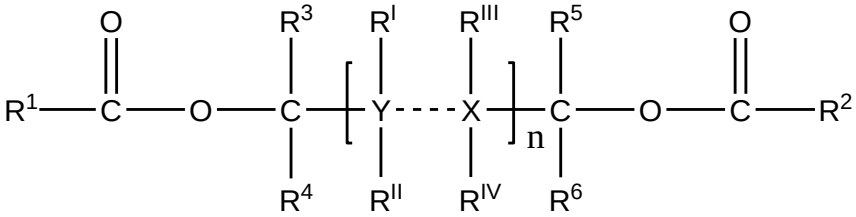
~~9~~6. The catalyst component according to claim ~~7 or 8~~3, wherein the aromatic carboxylate ester compound is as shown in Formula II,



Formula II

wherein in Formula II, R^I is C_1-C_{20} alkyl with or without a halogen atom substitute, C_2-C_{20}alkenyl with or without a halogen atom substitute, C_2-C_{20}alkynyl with or without a halogen atom substitute, or C_6-C_{30}alkylaryl with or without a halogen atom substitute; R^{II} is C_1-C_{20} alkyl, C_2-C_{20}alkenyl, C_2-C_{20}alkynyl, or C_6-C_{30}alkylaryl or ester group or amido group; R^{III}, R^{IV}, R^V, and R^{VI} ~~may be~~are identical to or different from each other, each independently selected from ~~a~~ the group consisting of C_1-C_{20} alkyl, C_2-C_{20}alkenyl, C_2-C_{20}alkynyl, C_1-C_{20}alkoxy, C_6-C_{30}arylalkyl, C_6-C_{30}alkylaryl, C_9-C_{40} fused aryl, and halogen;

the diol ester compound is as shown in Formula III,

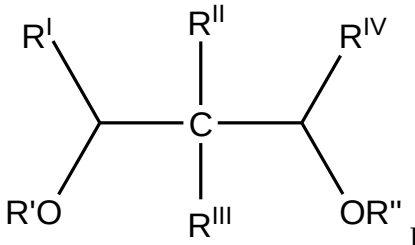


Formula III

wherein in Formula III, each of X and Y is independently selected from ~~a~~ the group consisting of carbon, oxygen, sulfur, nitrogen, boron, and silicon; $R^1$and R^2~~maybe~~ are identical to or different from each other, each independently selected from the~~a~~ group consisting of halogen, alkyl, cycloalkyl, aryl, alkenyl, fused aryl, and ester group; R^3-R^6~~maybe~~ are identical to or different from each other, each independently selected from ~~a~~ the group consisting of hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted aryl, substituted or unsubstituted alkenyl, substituted or unsubstituted

fused aryl, and substituted or unsubstituted ester group; R^I-R^{IV} ~~maybe~~ are identical to or different from each other, each independently selected from a group consisting of hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted aryl, substituted or unsubstituted alkenyl, substituted or unsubstituted fused aryl, and substituted or unsubstituted ester group; R^3-R^6 and R^I-R^{IV} each ~~may~~ optionally contains one or more heteroatoms as a substitute of a carbon or hydrogen atom or both, the heteroatom being oxygen, sulfur, nitrogen, boron, silicon, phosphorus, or a halogen atom; one or more of R^3-R^6, and R^I to R^{IV} ~~may be~~are optionally bonded together to form a ring; and n is an integer ranging from 1 to 10; and/or

the diether compound is as shown in Formula IV,



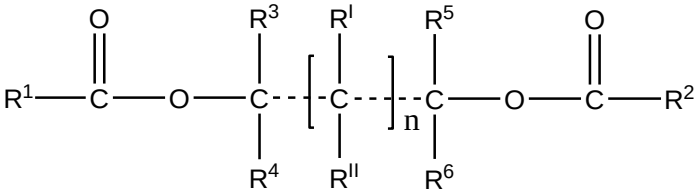
Formula IV

wherein in Formula IV, R′ and R″~~maybe~~ are identical to or different from each other, each independently selected from ~~a~~ the group consisting of C_1-C_{20}hydrocarbyl; n is an integer ranging from 0 to 6; R^I-R^{IV} ~~maybe~~ are identical to or different from each other, each independently selected from ~~a~~ the group consisting of hydrogen, alkoxy, substituted amino, halogen atoms, C_1-C_{20}hydrocarbyl, and C_6-C_{20}aryl, and two or more of R^I-R^{IV}~~may be~~ are bonded together to form a ring.

~~10~~7. The catalyst component according to claim ~~9~~6, wherein in Formula II, R^I is selected from ~~a~~ the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, sec-butyl, tert-butyl, pentyl, isopentyl, neopentyl, hexyl, ethenyl, allyl, ethynyl, phenyl, halogenated phenyl, alkyl-substituted phenyl, naphthyl, or biphenyl; and/or, R^{II} is selected from ~~a~~ the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, sec-butyl, tert-butyl, pentyl, isopentyl, neopentyl, hexyl, ethenyl, allyl, ethynyl, phenyl, halogenated phenyl, alkyl-substituted phenyl, naphthyl, biphenyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, butoxycarbonyl,

isobutoxycarbonyl, hexoxycarbonyl, isohexoxycarbonyl, neohexoxycarbonyl, heptyloxycarbonyl, isoheptyloxycarbonyl, neoheptyloxycarbonyl, octyloxycarbonyl, isooctyloxycarbonyl, and neooctyloxycarbonyl.

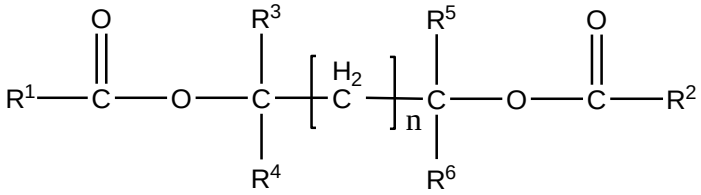
~~11~~8. The catalyst component according to any one of claim~~s7to 9~~ 6, wherein the diol ester compound is as shown in Formula IIIa:



Formula IIIa

wherein in Formula IIIa, R^1, R^2, and R^3-R^6~~may be~~ are identical to or different from each other, each independently selected from ~~a~~ the group consisting of C_1-C_{20} alkyl, C_3-C_{20}cycloalkyl, C_2-C_{20}alkenyl, C_6-C_{30}arylalkyl, C_6-C_{30}alkylaryl, C_9-C_{40} fused aryl and ester group; R^I and R^{II} ~~may be~~are identical to or different from each other, each independently selected from ~~a~~ the group consisting of hydrogen, C_1-C_{20} alkyl, C_3-C_{20}cycloalkyl, C_2-C_{20}alkenyl, C_6-C_{30}arylalkyl, C_6-C_{30}alkylaryl, C_9-C_{40} fused aryl and ester group; R^3-R^6 and R^I-R^{IV} each ~~may~~optionally contains one or more heteroatoms as a substitute of a carbon or hydrogen atom or both, the heteroatom being oxygen, sulfur, nitrogen, boron, silicon, phosphorus, or halogen atom; one or more of R^3-R^6, R^I, and R^{II}~~may be~~ are optionally bonded to form a ring; n is an integer ranging from 1 to 5.

~~12~~9. The catalyst component according to claim ~~11~~8, wherein the diol ester compound is as shown in Formula IIIb:



Formula IIIb.

~~13~~10. The catalyst component according to ~~any one of~~ claim~~s 9 to 12~~ 6, wherein in at least one of Formula III, Formula IIIa, and~~/or~~ Formula IIIb, each of R^1 and R^2 is independently selected from ~~a~~ the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, sec-butyl, tert-butyl, pentyl, hexyl, hydroxyalkyl, phenyl, halogenated phenyl, alkyl-substituted phenyl, naphthyl, biphenyl, a heterocycle-containing group; the heterocycle-containing group is ~~preferably~~ selected from a pyrrole-containing group, a pyridine-containing group, pyrimidine-containing group, ~~or~~ and a quinoline-containing group.

~~14~~11. The catalyst component according to ~~any one of~~ claim~~s 9 to 13~~ 6, wherein in Formula III, each of R^I and R^{II} is independently selected from ~~a~~ the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, sec-butyl, tert-butyl, pentyl, hexyl, hydroxyalkyl, phenyl, halogenated phenyl, and alkyl-substituted phenyl.

~~15~~12. The catalyst component according to ~~any one of~~ claim ~~s 7 to 14~~3, wherein the aromatic carboxylate ester compound is one or more selected from ~~a~~ the group consisting of ethyl benzoate, propyl benzoate, butyl benzoate, pentyl_benzoate, hexyl benzoate, heptyl_benzoate, octyl_benzoate,_nonyl benzoate, decyl_benzoate, isobutyl benzoate, isopentyl_benzoate, isohexyl_benzoate, isoheptyl_enzoate, isooctyl_benzoate, isononyl__benzoate, isodecyl__benzoate, neopentyl__benzoate, neohexyl__benzoate, neoheptyl__benzoate, neooctyl__benzoate, neononyl__benzoate, neodecyl__benzoate, diethyl phthalate, dipropyl__phthalate, diisobutyl__phthalate, di-n-butyl phthalate, di-n-pentyl_phthalate, diisopentyl_phthalate, dineopentyl_phthalate,_dihexyl phthalate, diheptyl__phthalate, dioctyl__phthalate, dinonyl__phthalate, diisohexyl__phthalate, diisoheptyl__phthalate, diisooctyl__phthalate, diisononyl__phthalate, diisobutyl 3-methylphthalate, di-n-butyl 3-methylphthalate, diisopentyl__3-methylphthalate, di-n-pentyl____3-methylphthalate, diisooctyl____3-methylphthalate, di-n-octyl 3-methylphthalate, diisobutyl_3-ethylphthalate,_di-n-butyl 3-ethylphthalate, di-n-octyl 3-ethyl_phthalate,_diisobutyl_3-ethylphthalate, di-n-pentyl_3-ethylphthalate, diisopentyl 3-ethylphthalate, diisobutyl___3-propylphthalate, di-n-butyl 3-propylphthalate,

diisobutyl 3-chlorophthalate, diisobutyl 3-butylphthalate, di-n-butyl 3-butylphthalate, di-n-butyl 4-butylphthalate, diisobutyl 4-propylphthalate, diisopentyl 4-butylphthalate, di-n-butyl 4-chlorophthalate, diisobutyl 4-chlorophthalate, di-n-octyl 4-chlorophthalate, di-n-butyl 4-methoxyphthalate, and diisobutyl 4-methoxyphthalate; and/or

the diether compound is one or more selected from ~~a~~the group consisting of 2-isopropyl-1,3-dimethoxypropane, 2-butyl-1,3-dimethoxypropane, 2-cyclohexyl-1,3-dimethoxypropane, 2-benzyl-1,3-dimethoxypropane, 2-phenyl-1,3-dimethoxypropane, 2-(1-naphthyl)-1,3-dimethoxypropane, 2-isopropyl-2-isopentyl-1,3-dimethoxypropane, 2-isopropyl-2-isobutyl-1,3-dimethoxypropane, 2-isopropyl-2-butyl-1,3-dimethoxypropane, 2,2-dicyclopentyl-1,3-dibenzoyloxypropane, 2,2-dicyclohexyl-1,3-dimethoxypropane, 2,2-dibutyl-1,3-dimethoxypropane, 2,2-diisobutyl-1,3-dimethoxypropane, 2,2-diisopropyl-1,3-dimethoxypropane, 2,2-diethyl-1,3-dimethoxypropane, 2-ethyl-2-butyl-1,3-dimethoxypropane, 2,4-dimethoxypentane, 3-ethyl-2,4-dimethoxypentane, 3-methyl-2,4-dimethoxypentane, 3-propyl-2,4-dimethoxypentane, 3-isopropyl-2,4-dimethoxypentane, 3,5-dimethoxyheptane, 4-ethyl-3,5-dimethoxyheptane, 4-propyl-3,5-dimethoxyheptane, 4-isopropyl-3,5-dimethoxyheptane, 9,9-dimethoxymethylfluorene, 9,9-dimethoxymethyl-4-tert-butylfluorene, 9,9-dimethoxymethyl-4-propylfluorene, 9,9-dimethoxymethyl-1,2,3,4-tetrahydrofluorene, 9,9-dimethoxymethyl-1,2,3,4,5,6,7,8-octahydrofluorene, 9,9-dimethoxymethyl-2,3,6,7-diphenylpropylindene, 9,9-dimethoxymethyl-1,8-dichlorofluorene, 7,7-dimethoxymethyl-2,5-norbornadiene, 1,4-dimethoxybutane, 2,3-diisopropyl-1,4-dimethoxybutane, 2,3-dibutyl-1,4-dimethoxybutane, 1,2-dimethoxybenzene, 3-ethyl-1,2-dimethoxybenzene, 4-butyl-1,2-dimethoxybenzene, 1,8-dimethoxynaphthalene, 2-ethyl-1,8-dimethoxynaphthalene, 2-propyl-1,8-dimethoxynaphthalene, 2-butyl-1,8-dimethoxynaphthalene, 4-butyl-1,8-dimethoxynaphthalene, 4-isobutyl-1,8-dimethoxynaphthalene,

4-isopropyl-1,8-dimethoxynaphthalene, and 4-propyl-1,8-dimethoxynaphthalene.

~~16~~13. A catalyst for olefin polymerization, comprising:

A) the catalyst component according to ~~any one of~~claim~~s~~ 1 ~~to 15~~;

B) an organoaluminium compound; and optionally,

C) an organosilicon compound.

~~17~~14. The catalyst according to claim ~~16~~13, wherein the olefin is propene.

15. A method for olefin polymerization, comprising polymerizing an olefin feedstock in presence of the catalyst comprising the catalyst component of claim 1.

16. The method of claim 15, wherein the olefin feedstock comprises propylene.

17. A method for olefin polymerization, comprising polymerizing an olefin feedstock in presence of the catalyst comprising the catalyst component of claim 13.