

ABSTRACT (filed)

A method for producing an olefin polymer, which comprises homopolymerizing or copolymerizing an olefin in the presence of a catalyst for olefin polymerization, comprising the following (A) and (C) as a catalyst component, or a catalyst for olefin polymerization, comprising the following (A), (B) and (C) as a catalyst:

(A) a transition metal complex dissolved, suspended or slurried in an aliphatic hydrocarbon compound;

(B): a compound dissolved, suspended or slurried in an aliphatic hydrocarbon compound, which is selected from the following (B1) to (B3)

(B1) an organoaluminum compound represented by the general formula $E^1_nAlZ_{3-n}$

(B2) a cyclic aluminoxane having a structure represented by the general formula $\{-Al(E^2)-O-\}_b$

(B3) a linear aluminoxane having a structure represented by the general formula $E^3\{-Al(E^3)-O-\}_cAlE^3_2$

(wherein E^1 to E^3 respectively represents a hydrocarbon group having 1 to 8 carbon atoms, and all of E^1 , E^2 and E^3 may be the same or different; Z represents a hydrogen atom or a halogen atom, and all of Z may be the same or different; a represents a numeral satisfying $0 < a \leq 3$; b represents an integer of not less than 2; and c represents an integer of not less than 1); and

(C): at least one boron compound suspended or slurried in

an aliphatic hydrocarbon compound, which is selected from the following (C1) to (C3):

(C1) a boron compound represented by the general formula $BQ^1Q^2Q^3$;

5 (C2) a boron compound represented by the general formula $G^+(BQ^1Q^2Q^3Q^4)^-$; and

(C3) a boron compound represented by the general formula $(L-H)^+(BQ^1Q^2Q^3Q^4)^-$,

(wherein B represents a boron atom in the trivalent valence state; $Q^1 - Q^4$ may be the same or different and represent
10 a halogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a halogenated hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group having 1 to 20 carbon atoms, an alkoxy group having 1 to 20 carbon atoms or an amino group
15 having 2 to 20 carbon atoms; G^+ represents an inorganic or organic cation; L represents a neutral Lewis base; and $(L-H)^+$ represents a Brønsted acid).

ABSTRACT (published)

- A method for producing an olefin polymer, characterized in that an olefin is homopolymerized or
- 5 copolymerized in the presence of a catalyst for olefin polymerization, comprising the following (A) and (C) as catalyst components, or a catalyst for olefin polymerization, comprising the following (A), (B) and (C) as catalyst components:
- 10 (A) a transition metal complex dissolved, suspended or slurried in an aliphatic hydrocarbon compound;
- (B) an organoaluminum compound or aluminoxane selected from compounds (B1) to (B3) dissolved, suspended or slurried in an aliphatic hydrocarbon compound, and
- 15 (C) at least one boron compound selected from compounds (C1) to (C3) suspended or slurried in an aliphatic hydrocarbon compound.