CLAIMS

[Claim 1]

A method for producing an olefin polymer, comprising (co)polymerizing at least one olefin selected from the group consisting of ethylene and α-olefins having 3 to 20 carbon atoms in a polymerization vessel in the presence of

(A) a solid catalyst component for olefin polymerization,

(B) an aliphatic amide, and

(C) an organoaluminum compound.

[Claim 2]

The method for producing an olefin polymer according to Claim 1, wherein the aliphatic amide (B) and the organoaluminum compound (C) are preliminarily mixed and then added to the polymerization vessel.

[Claim 3]

The method for producing an olefin polymer according to Claim 1 or 2, wherein the aliphatic amide (B) is represented by general formula (I) below:

$(C_mH_{2m+1}CO)N(CH_2CH_2OH)_2$ (I),

in the general formula (I), m denotes an integer of 1 to 30.

[Claim 4]

The method for producing an olefin polymer according to any one of Claims 1 to 3, wherein the organoaluminum compound (C) is represented by general formula (II) below:

$R^a_mAl(OR^b)_nH_p$ (II)

(In general formula (II), R^a and R^b each denote a hydrocarbon group having 1 to 20 carbon atoms; m, n and p satisfy the relations; $0 < m \leq 3$; n is $0 \leq n < 3$, p is $0 \leq p < 3$, and $m + n + p = 3$).

[Claim 5]

The method for producing an olefin polymer according to any one of Claims 1 to 4, wherein the addition ratio (molar ratio), (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is 0.01 to 4.0.

[Claim 6]

The method for producing an olefin polymer according to any one of Claims 1 to 4, wherein the addition ratio (molar ratio), (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is 0.01 to 3.5.

[Claim 7]

The method for producing an olefin polymer according to any one of Claims 1 to 4, wherein the addition ratio (molar ratio), (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is (C)/(B) = 0.01 to 3.2.

[Claim 8]

The method for producing an olefin polymer according to any one of Claims 1 to 4, wherein the addition ratio (molar ratio), (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is 0.01 to 3.0.

[Claim 9]

The method for producing an olefin polymer according to any one of Claims 1 to 4, wherein the addition ratio (molar ratio), (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is 0.2 to 2.8.

[Claim 10]

The method for producing an olefin polymer according to any one of Claims 1 to 4, wherein the addition ratio (molar ratio), (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is 0.3 to 2.5.

[Claim 11]

The method for producing an olefin polymer according to any one of Claims 1 to 10, wherein the solid catalyst component for olefin polymerization (A) contains

(A-1) a group 4 transition metal compound having a cyclopentadienyl skeleton,

(A-2) at least one compound selected from

(a) an organometal compound,

(b) an organoaluminoxy compound, and

(c) a compound that forms an ion pair by reacting with (A-1), and

(A-3) a particulate carrier.

[Claim 12]

The method for producing an olefin polymer according to any one of Claims 1 to 11, wherein the (co)polymerization is conducted in a suspension, a solution, or a gas phase.

Claims

1. A method for producing an olefin polymer, comprising (co)polymerizing at least one olefin selected from the group consisting of ethylene and α-olefins having 3 to 20 carbon atoms in a polymerization vessel in the presence of

(A) a solid catalyst component for olefin polymerization,

(B) an aliphatic amide, and

(C) an organoaluminum compound,

wherein the aliphatic amide (B) and the organoaluminum compound (C) are preliminarily mixed and then added to the polymerization vessel.

2. The method for producing an olefin polymer according to claim 1, wherein the aliphatic amide (B) is represented by general formula (I) below:

$(C_mH_{2m+1}CO)N(CH_2CH_2OH)_2$ (I),

in the general formula (I), m denotes an integer of 1 to 30.

3. The method for producing an olefin polymer according to claim 1, wherein the organoaluminum compound (C) is represented by general formula (II) below:

$R^a{}_mAl(OR^b)_nH_p$ (II)

in general formula (II), R^a and R^b each denote a hydrocarbon group having 1 to 20 carbon atoms; m, n and p satisfy the relations: $0<m\leqq3$; n is $0\leqq n<3$, p is $0\leqq p<3$, and $m+n+p=3$.

4. The method for producing an olefin polymer according to claim 1, wherein the molar ratio, (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is 0.01 to 4.0.

5. The method for producing an olefin polymer according to claim 1, wherein the molar ratio, (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is 0.01 to 3.5.

6. The method for producing an olefin polymer according to claim 1, wherein the molar ratio, (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is (C)/(B)=0.01 to 3.2.

7. The method for producing an olefin polymer according to claim 1, wherein the molar ratio, (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is 0.01 to 3.0.

8. The method for producing an olefin polymer according to claim 1, wherein the molar ratio, (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is 0.2 to 2.8.

9. The method for producing an olefin polymer according to claim 1, wherein the molar ratio, (C)/(B), of the organoaluminum compound (C) to the aliphatic amide (B) is 0.3 to 2.5.

10. The method for producing an olefin polymer according to claim 1, wherein the solid catalyst component for olefin polymerization (A) contains

(A-1) a group 4 transition metal compound having a cyclopentadienyl skeleton,

(A-2) at least one compound selected from

(a) an organometal compound,

(b) an organoaluminoxy compound, and

(c) a compound that forms an ion pair by reacting with (A-1), and

(A-3) a particulate carrier.

11. The method for producing an olefin polymer according to claim 1, wherein the (co)polymerization is conducted in a suspension, a solution, or a gas phase.