

Claims

- [Claim 1] A solid catalyst component for olefin polymerization comprising magnesium, a halogen, titanium, vanadium, and an internal electron donor compound selected by organic acid diester.
- [Claim 2] A solid catalyst component for olefin polymerization comprising magnesium, a halogen, titanium, vanadium, and an internal electron donor compound represented by the following general formula (1),

$$R^1_k(C_6H_{4-k})(COOR^2)(COOR^3) \quad (1)$$
 wherein R^1 is a halogen atom or an alkyl group having 1 to 20 carbon atoms, R^2 and R^3 are a linear alkyl group having 1 to 12 carbon atoms, a branched alkyl group having 3 to 12 carbon atoms, a vinyl group, or an alkenyl group having 3 to 12 carbon atoms, provided that R^2 and R^3 are either identical or different, and k is an integer from 0 to 4, provided that a plurality of R^1 are either identical or different when k is an integer from 2 to 4.
- [Claim 3] The solid catalyst component according to claim 1, the solid catalyst component comprising titanium in a content of 0.1 to 10 mass%.
- [Claim 4] The solid catalyst component according to claim 1, the solid catalyst component comprising vanadium in a content of 0.1 to 20 mass%.
- [Claim 5] The solid catalyst component according to claim 1, the solid catalyst component comprising vanadium in a molar ratio of 0.1 to 20 with respect to titanium.
- [Claim 6] A method for producing a solid catalyst component for olefin polymerization comprising bringing a vanadium compound into contact with a solid component that comprises magnesium, a halogen, titanium, and an internal electron donor compound.
- [Claim 7] The method for producing a solid catalyst component for olefin polymerization according to claim 6, wherein the vanadium compound is brought into contact with the solid component in a molar ratio of 0.01 to 10 with respect to titanium.
- [Claim 8] An olefin polymerization catalyst comprising the solid catalyst component for olefin polymerization according to claim 1, an organoaluminum promoter, and an optional external electron donor.
- [Claim 9] A method for producing an olefin copolymer comprising copolymerizing ethylene and propylene using the olefin polymerization

catalyst according to claim 1.