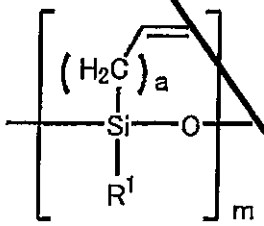
CLAIMS:

1. A process for producing a polymer composition, which comprises mixing and reacting:

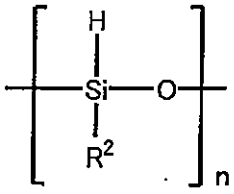
as component (A), an unsaturated group-containing siloxane compound of the following formula (1):



(1)

wherein R^1 is a hydrogen atom or a $C_{1\text{-}20}$ hydrocarbon group, m is an integer of at least 3, a is an integer of from 0 to 10, and the siloxane structure is a chain or cyclic structure,

as component (B), a siloxane compound having a structure of the following formula (2) wherein hydrogen is directly bonded to silicon,



(2)

wherein R^2 is a $C_{1\text{-}20}$ hydrocarbon group, n is an integer of at least 3, and the siloxane structure is a chain or cyclic structure,

as component (C), at least one member selected from the group consisting of organic metal compounds of Group 1, 2, 12, 13 and 14 metals of the periodic table, and

as component (D), a metal catalyst of Group 8, 9 or 10 metal of the periodic table.

2. The process according to Claim 1, wherein to 1 mol of the Si content in component (A), the Si content in component (B) is within a range of from 0.01 mol to 1,000 mol, the content of the organic metal compound as component (C) is within a range of from 0.001 mol to 100 mol, and the content of the metal catalyst as component (D) is within a range of from 0.00001 mol to 10 mol.

3. The process according to Claim 1 or 2, wherein a compound of the following formula (4) is further added:

$$[O_p M_u (OR^7)_q X_r]_y \qquad (4)$$

wherein M is Ti, Zr or Hf, R^7 is a C_{1-20} hydrocarbon group, X is fluorine, chlorine, bromine or iodine, p, q, u and r are $p \geqq 0$, $q > 0$, $u \geqq 1$ and $r \geqq 0$, respectively, and represent numbers compatible with atomic valences of Ti, Zr and Hf, and y is an integer.

4. The process according to Claim 1 or 2, wherein an alcohol, an organic silanol or an organic silicon compound is further added which reacts with an organic metal compound of Group 1, 2, 12, 13 or 14 metal of the periodic table, as component (C), or lets the organic metal compound form a complex.

5. The process according to Claim 1 or 2, wherein component (C) is an organic aluminum compound or an organic zinc compound.

6. The process according to Claim 1 or 2, wherein component (D) is a platinum catalyst or a ruthenium catalyst.

7. A polymer composition produced by the process as defined in any one of Claims 1 to 6.

8. A sealing material containing the polymer composition as defined in Claim 7.

9. A gas barrier material containing the polymer composition as defined in Claim 7.

10. An insulating and sealing material for semiconductors, containing the polymer composition as defined in Claim 7.

11. An LED device using the sealing material as defined in Claim 8.

12. A resin component using the gas barrier material as defined in Claim 9.

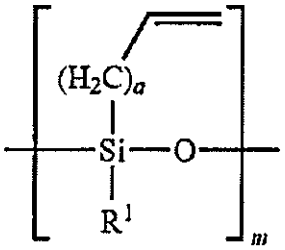
13. A semiconductor device using the insulating and sealing material for semiconductors, as defined in Claim 10.

Claims

1. A process for producing a polymer composition, which comprises mixing and reacting:

as component (A), an unsaturated group-containing siloxane compound of the following formula (1):

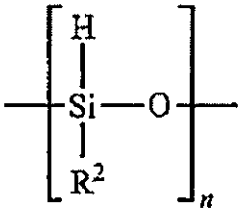
(1)



wherein R^1 is a hydrogen atom or a C_{1-20} hydrocarbon group, m is an integer of at least 3, a is an integer of from 0 to 10, and the siloxane structure is a chain or cyclic structure,

as component (B), a siloxane compound having a structure of the following formula (2) wherein hydrogen is directly bonded to silicon,

(2)



wherein R^2 is a C_{1-20} hydrocarbon group, n is an integer of at least 3, and the siloxane structure is a chain or cyclic structure,

as component (C), at least one member selected from the group consisting of organic metal compounds of Group 1, 2, 12, 13 and 14 metals of the periodic table, having a structure in which at least one carbon atom is directly bonded to a metal, and

as component (D), a metal catalyst of Group 8, 9 or 10 metal of the periodic table.

2. The process according to claim 1, wherein to 1 mol of the Si content in component (A), the Si content in component (B) is within a range of from 0.01 mol to 1,000 mol, the content of the organic metal compound as component (C) is within a range of from 0.001 mol to 100 mol, and the content of the metal catalyst as component (D) is within a range of from 0.00001 mol to 10 mol.

3. The process according to claim 1, wherein a compound of the following formula (4) is further added:

$$[O_pM_u(OR^7)_qX_r]_y \quad (4)$$

wherein M is Ti, Zr or Hf, R^7 is a C_{1-20} hydrocarbon group, X is fluorine, chlorine, bromine or iodine, p, q, u and r are $p \geq 0$, $q > 0$, $u \geq 1$ and $r \geq 0$, respectively, and represent numbers compatible with atomic valences of Ti, Zr and Hf, and y is an integer.

4. The process according to claim 1, wherein an alcohol, an organic silanol or an organic silicon compound is further added which reacts with an organic metal compound of Group 1, 2, 12, 13 or 14 metal of the periodic table, having a structure in which at least one carbon atom is directly bonded to a metal, as component (C), or lets the organic metal compound form a complex.

5. The process according to claim 1, wherein component (C) is an organic aluminum compound or an organic zinc compound.

6. The process according to claim 1, wherein component (D) is a platinum catalyst or a ruthenium catalyst.

7. A polymer composition produced by the process as defined in claim 1.

8. A sealing material containing the polymer composition as defined in claim 7.

9. A gas barrier material containing the polymer composition as defined in claim 7.

10. An insulating and sealing material for semiconductors, containing the polymer composition as defined in claim 7.

11. An LED device using the sealing material as defined in claim 8.

12. A resin component using the gas barrier material as defined in claim 9.

13. A semiconductor device using the insulating and sealing material for semiconductors, as defined in claim 10.