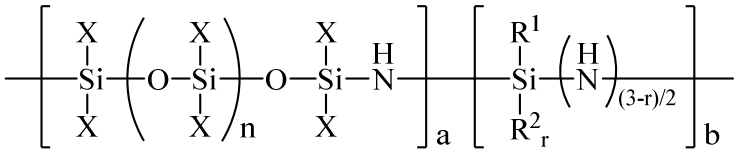
CLAIMS:

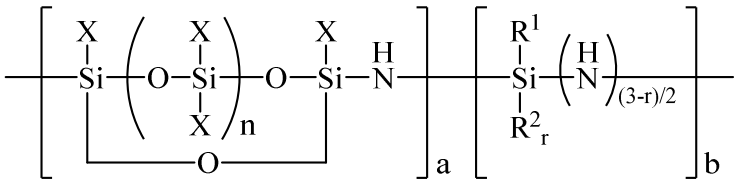
1. A polysiloxazane compound comprising a repeating unit of the following general formula (1), and having a number average molecular weight of 500 to 100,000 as measured by gel permeation chromatography versus polystyrene standards,



(1)

wherein R^1 and R^2 each independently represent a substituted or unsubstituted C_1-C_{50} monovalent hydrocarbon group optionally containing a hetero atom, Xs each independently represent a methyl group, an oxygen atom, NH-SiX_2, or $(NH)_{(3-r)/2}$-$SiR^1R^2_r$ (R^1 and R^2 have the same meaning as provided above), or Xs are joined to one another to represent an oxygen atom, n is an integer of 2 to 8, when the number of NH-SiX_2 is denoted by p, p satisfies $0 < p/(2n + 4) \leq 0.5$, r is an integer of 0, 1, or 2, and a and b are numbers satisfying $0 < a \leq 1$, $0 \leq b < 1$, and $a + b = 1$.

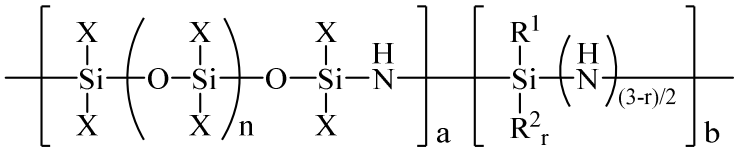
2. The polysiloxazane compound according to claim 1, wherein the repeating unit has the following general formula (2):



(2)

wherein R^1, R^2, a, b, n, and r have the same meaning as provided above, Xs each independently represent a methyl group, NH-SiX_2, or $(NH)_{(3-r)/2}$-$SiR^1R^2_r$ (R^1 and R^2 have the same meaning as provided above), and when the number of NH-SiX_2 is denoted by p, p satisfies $0 < p/(2n + 2) \leq 0.5$.

3. The polysiloxazane compound according to claim 1, wherein the repeating unit has the following general formula (3):



(3)

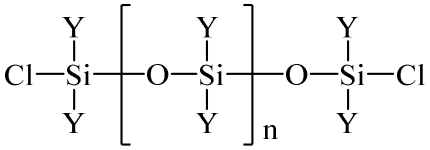
wherein R^1, R^2, a, b, n, and r have the same meaning as provided above, Xs each independently represent a methyl group or NH-SiX_2, when the number of NH-SiX_2 is denoted by p, p satisfies $0 < p/(2n + 4) \leq 0.5$.

4. The polysiloxazane compound according to claim 2, wherein n in the general formula (2) is 2.

5. The polysiloxazane compound according to claim 3, wherein n in the general formula (3) is 2.

6. A method for producing the polysiloxazane compound according to claim 1, the method comprising:

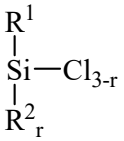
a step of performing ammonolysis homopolymerization of a chlorosiloxane compound of the following general formula (4):



(4)

wherein n has the same meaning as provided above, Ys each independently represent a methyl group, a chlorine atom, or an oxygen atom, or Ys are joined to one another to represent an oxygen atom, and when the number of chlorine atoms is denoted by q, q satisfies $0 < q/(2n + 2) \leq 0.5$, or

a step of mixing a chlorosiloxane compound of the general formula (4) and a chlorosilane compound of the following general formula (5):

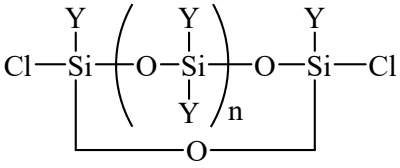


(5)

wherein R^1, R^2, and r have the same meaning as provided above, and performing ammonolysis polymerization.

7. The method for producing a polysiloxazane compound according to claim 6, further comprising a step of adding an alkaline aqueous solution and performing liquid-liquid separation after the ammonolysis polymerization.

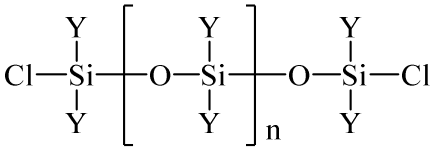
8. The method for producing a polysiloxazane compound according to claim 6 or 7, wherein the chlorosiloxane compound has the following general formula (6):



(6)

wherein n has the same meaning as provided above, Ys each independently represent a methyl group or a chlorine atom, and when the number of chlorine atoms is denoted by q, q satisfies $0 < q/2n \leq 0.5$.

9. The method for producing a polysiloxazane compound according to claim 6 or 7, wherein the chlorosiloxane compound has the following general formula (7):



(7)

wherein n has the same meaning as provided above, Ys each independently represent a methyl group or a chlorine atom, and when the number of chlorine atoms is denoted by q, q satisfies $0 < q/(2n + 2) \leq 0.5$.

10. The method for producing a polysiloxazane compound according to claim 8, wherein n in the general formula (6) is 2.

11. The method for producing a polysiloxazane compound according to claim 9, wherein n in the general formula (7) is 2.

12. A composition comprising the polysiloxazane compound according to any one of claims 1 to 5, and a solvent.

13. The composition according to claim 12, wherein the composition is a primer.

14. A curable composition comprising the composition according to claim 13, and at least one metal selected from the group consisting of titanium, aluminum, zinc, and tin.

15. A cured product obtaining by curing the curable composition according to claim 14.