CLAIMS

1. A modified conjugated diene-based polymer comprising a Si atom and a N atom, and satisfying the following conditions a) and b):

a) a N content in a polymer according to NSX analysis is 150 ppm or more on the basis of a weight;

b) a rate of change of mooney viscosity (MV_R) according to the following Mathematical Formula 1 is 20% or less; and

d) a molar ratio (N/Si) of the N atom and the Si atom of 0.75 or more:

[Mathematical Formula 1]

$$MV_R = [(MV_f - MV_i)/MV_i] \times 100$$

in Mathematical Formula 1, MV_R is the rate of change of mooney viscosity, MV_f is mooney viscosity at 100°C after standing the polymer at 25°C for 30 days, and MV_i is initial mooney viscosity of the polymer at 100°C.

2. The modified conjugated diene-based polymer of claim 1, wherein the modified conjugated diene-based polymer has the N content of 170 ppm or more on the basis of a weight.

3. The modified conjugated diene-based polymer of claim 1, wherein the modified conjugated diene-based polymer has the rate of change of mooney viscosity (MV_R) according to Mathematical Formula 1 of 15% or less.

4. The modified conjugated diene-based polymer of claim 1, wherein a Si content in a polymer according to ICP analysis is 50 ppm or more on the basis of a weight.

5. The modified conjugated diene-based polymer of claim

1, comprising a first chain comprising a repeating unit derived from a conjugated diene-based monomer; a second chain comprising a repeating unit derived from an N-functional group-containing monomer; and a derived unit from an alkoxysilane-based compound.

6. The modified conjugated diene-based polymer of claim 5, wherein the alkoxysilane-based compound is an amine-containing alkoxysilane-based compound or a non-amine-containing alkoxysilane-based compound.

7. The modified conjugated diene-based polymer of claim 5, wherein the first chain further comprises a repeating unit derived from an aromatic vinyl-based monomer.

8. The modified conjugated diene-based polymer of claim 5, wherein the second chain further comprises a derived unit from a conjugated diene-based monomer.

9. The modified conjugated diene-based polymer of claim 1, wherein a number average molecular weight (Mn) is 1,000 g/mol to 2,000,000 g/mol, a weight average molecular weight (Mw) is 1,000 g/mol to 3,000,000 g/mol, and a peak average molecular weight (Mp) is 1,000 g/mol to 3,000,000 g/mol.

10. A method for preparing the modified conjugated diene-based polymer of claim 1, the method comprising:
polymerizing a conjugated diene-based monomer, or a conjugated diene-based monomer and an aromatic vinyl-based monomer in the presence of a polymerization initiator in a carbon solvent to prepare an active first chain (S1);

reacting the active first chain with an alkoxysilane-based modifier to prepare a modified active first chain (S2); and reacting the modified active first chain and a macromonomer comprising a repeating unit derived from an N-functional group-containing monomer (S3).

11. The method for preparing the modified conjugated diene-based polymer of claim 10, wherein the macromonomer further comprises a derived unit from a conjugated diene-based monomer.

12. The method for preparing the modified conjugated diene-based polymer of claim 10, wherein the macromonomer is prepared by low-degree polymerization reaction of an N-functional group-containing monomer, or an N-functional group-containing monomer and a conjugated diene-based monomer in the presence of an organolithium compound in a hydrocarbon solvent.

13. The method for preparing the modified conjugated diene-based polymer of claim 10, wherein the alkoxysilane-based compound is used in 0.1 mol to 10 mol based on 1 mol of the polymerization initiator.

14. The method for preparing the modified conjugated diene-based polymer of claim 10, wherein the macromonomer is used in 0.1 to 4.0 mol based on 1 mol of the polymerization initiator.

15. A rubber composition comprising the modified conjugated diene-based polymer of claim 1, and a filler.

16. The rubber composition of claim 15, wherein the rubber composition comprises 0.1 parts by weight to 200 parts by weight of the filler based on 100 parts by weight of the modified conjugated diene-based polymer.