Claims

[Claim 1] A tire member obtained by subjecting a composition containing a hydrogenated conjugated diene polymer and a crosslinking agent to a crosslinking treatment, wherein the hydrogenated conjugated diene polymer is a hydrogenated product of a conjugated diene polymer that has a structural unit derived from butadiene and has a functional group at one end or both ends and the functional group is one or more groups selected from the group consisting of an amino group, an imino group, a pyridyl group, a phosphino group, a thiol group, and a hydrocarbyloxysilyl group;

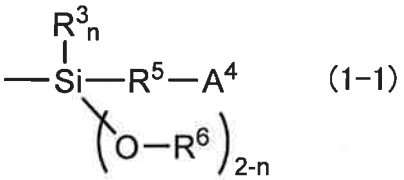
the hydrogenation rate of the structural unit derived from butadiene of the hydrogenated conjugated diene polymer is 90% or more; and

the hydrogenated conjugated diene polymer has a structural unit derived from styrene.

~~[Claim 2] The tire member according to claim 1, wherein the hydrogenation rate of the structural unit derived from butadiene of the hydrogenated conjugated diene polymer is 70% or more.~~

[Claim 2~~3~~] The tire member according to claim 1 ~~or 2~~, wherein the hydrogenated conjugated diene polymer has a structure represented by the following general formula (1-1) as a structure containing the functional group at the end(s):

[Chem 1]



(1-1)

wherein A^4 is a functional group which has one or more atoms selected from the group consisting of N, P, and S and in which a part or all of one or more atoms selected from the above group may be protected with a hydrocarbylsiliy group and the atom bonding to R^5 is N, P, or S; R^3 is a hydrocarbyl group and n is 0 to 2; R^5 is a hydrocarbylene group; R^6 is a hydrogen atom or a hydrocarbyl group; and R^3's and R^6's existing in plurality may be each the same or different.

~~[Claim 4] The tire member according to any one of claims 1 to 3, wherein the hydrogenated conjugated diene polymer has a structural unit derived from an aromatic vinyl compound.~~

~~[Claim 5] The tire member according to claim 4, wherein the aromatic vinyl compound is one or more compounds selected from styrene and α-methylstyrene.~~

[Claim 3~~6~~] The tire member according to claim 1 or 2~~4 or 5~~, wherein, in the hydrogenated conjugated diene polymer, a chain composed of the structural units derived from styrene~~the aromatic vinyl compound~~ ranging in an amount of 8 or more units is contained in a ratio of 10% by mass or less relative to the whole of the structural units derived from styrene~~the aromatic vinyl compound~~.

[Claim 4~~7~~] The tire member according to any one of claims 1 to 3~~6~~, wherein the hydrogenated conjugated diene polymer has a structural unit derived from a conjugated diene compound other than butadiene.

[Claim 5~~8~~] The tire member according to claim 4~~7~~, wherein the conjugated diene compound other than butadiene is isoprene.

~~[Claim 9] The tire member according to any one of claims 1 to 8, wherein the hydrogenation rate of the structural unit derived from butadiene of the hydrogenated conjugated diene polymer is 80% or more.~~

[Claim 6~~10~~] The tire member according to any one of claims 1 to 5~~9~~, wherein the hydrogenated conjugated diene polymer is a hydrogenated product of a polymer obtained by polymerizing monomers including 50 to 90 parts by mass of butadiene, 10 to 50 parts by mass of styrene~~an aromatic vinyl compound~~, and 0 to 40 parts by mass of a conjugated diene compound other than butadiene.

[Claim 7~~11~~] The tire member according to any one of claims 1 to 6~~10~~, wherein 1,2-vinyl content in the structure derived from butadiene in the polymer obtained by polymerizing monomer(s) including butadiene is from 5 to 70%.

[Claim 8~~12~~] The tire member according to any one of claims 1 to 7~~11~~, wherein the hydrogenated conjugated diene polymer has a polyisoprene block.

[Claim 9~~13~~] The tire member according to claim 8~~12~~, wherein the ratio of 1,4-bond/3,4-bond of the polyisoprene block is from 60/40 to 98/2.

[Claim 10~~14~~] The tire member according to any one of claims 1 to 9~~13~~, wherein the composition contains one or more selected from silica and carbon black.

[Claim 11~~15~~] The tire member according to any one of claims 1 to 10~~14~~, wherein the tire member is a tread.

[Claim 12~~16~~] The tire member according to any one of claims 1 to 10~~14~~, wherein the tire member is a side wall.

[Claim 13~~17~~] A hydrogenated conjugated diene polymer, which is a hydrogenated product of a conjugated diene polymer that has a structural unit derived from butadiene and has a functional group at one end or both ends of the polymer chain and in which the functional group is at least one group selected from the group consisting of an amino group, an imino group, a pyridyl group, a phosphino group, a thiol group, and a hydrocarbyloxysilyl group;

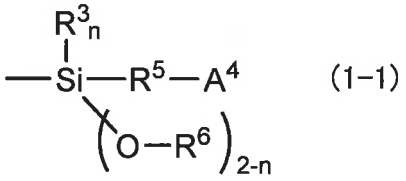
the hydrogenation rate of the structural unit derived from butadiene of the hydrogenated conjugated diene polymer is 90% or more; and

the hydrogenated conjugated diene polymer has a structural unit derived from styrene.

~~[Claim 18] The hydrogenated conjugated diene polymer according to claim 17, wherein the hydrogenation rate of the structural unit derived from butadiene is 70% or more.~~

[Claim 14~~19~~] The hydrogenated conjugated diene polymer according to claim 13~~17 or 18~~, which has a structure represented by the following general formula (1-1) as a structure containing the functional group at the end(s) of the polymer chain:

[Chem 2]



(1-1)

wherein A^4 is a functional group which has one or more atoms selected from the group consisting of N, P, and S and in which a part or all of one or more atoms selected from the above group may be protected with a hydrocarbylsiliy group and the atom bonding to R^5 is N, P, or S; R^3 is a hydrocarbyl group and n is 0 to 2; R^5 is a hydrocarbylene group; R^6 is a

hydrogen atom or a hydrocarbyl group; and R^3's and R^6's existing in plurality may be each the same or different.

~~[Claim 20] The hydrogenated conjugated diene polymer according to any one of claims 17 to 19, which has a structural unit derived from an aromatic vinyl compound.~~

~~[Claim 21] The hydrogenated conjugated diene polymer according to claim 20, wherein the aromatic vinyl compound is one or more compounds selected from styrene and α-methylstyrene.~~

[Claim 15~~22~~] The hydrogenated conjugated diene polymer according to claim 13 or 14~~20 or 21~~, wherein a chain composed of the structural units derived from styrene~~the aromatic vinyl compound~~ ranging in an amount of 8 or more units is contained in a ratio of 10% by mass or less relative to the whole of the structural units derived from styrene~~the aromatic vinyl compound~~.

[Claim 16~~23~~] The hydrogenated conjugated diene polymer according to any one of claims 13 to 15~~17 to 22~~, which has a structural unit derived from a conjugated diene compound other than butadiene.

[Claim 17~~24~~] The hydrogenated conjugated diene polymer according to claim 16~~23~~, wherein the conjugated diene compound other than butadiene is isoprene.

~~[Claim 25] The hydrogenated conjugated diene polymer according to any one of claims 17 to 24, wherein the hydrogenation rate of the structural unit derived from butadiene is 80% or more.~~

[Claim 18~~26~~] The hydrogenated conjugated diene polymer according to any one of claims 13 to 17~~17 to 25~~, which is a hydrogenated product of a polymer obtained by polymerizing monomers including 50 to 90 parts by mass of butadiene, 10 to 50 parts by mass of styrene~~an aromatic vinyl compound~~, and 0 to 40 parts by mass of a conjugated diene compound other than butadiene.

[Claim 19~~27~~] The hydrogenated conjugated diene polymer according to any one of claims 13 to 18~~17 to 26~~, wherein 1,2-vinyl content in the structure derived from butadiene in the polymer obtained by polymerizing monomer(s) including butadiene is from 5 to 70%.

[Claim 20~~28~~] The hydrogenated conjugated diene polymer according to any one of claims 13 to 19~~17 to 27~~, which has a polyisoprene block.

[Claim 21~~29~~] The hydrogenated conjugated diene polymer according to claim 20~~28~~, wherein the ratio of 1,4-bond/3,4-bond of the polyisoprene block is from 60/40 to 98/2.

[Claim 22~~30~~] A polymer composition for tire member formation, which contains the hydrogenated conjugated diene polymer according to any one of claims 13 to 21~~17 to 29~~ and a crosslinking agent.