Claims

[Claim 1]

A hydrogenated block copolymer comprising, in a molecule thereof, a polymer block (C) having a conjugated diene compound as a main component, a polymer block (B) having a conjugated diene compound as a main component, and a polymer block (S) having a vinyl aromatic compound as a main component, wherein:

in the hydrogenated block copolymer, a content of the polymer block (C) is 1 to 20 % by mass, a content of the polymer block (B) is 69 to 98 % by mass, and a content of the polymer block (S) is 1 to 15 % by mass;

a vinyl bond content before hydrogenation of the polymer block (C) is 1 to 25 mol%, and a vinyl bond content before hydrogenation of the polymer block (B) is 60 to 100 mol%;

a degree of hydrogenation of the hydrogenated block copolymer is 80 mol% or more; and

a tan δ peak obtained by a dynamic viscoelasticity measurement (1 Hz) of the hydrogenated block copolymer is in a range of higher than -45°C and 10°C or lower, a height of the tan δ peak is 1.0 or more, and a width at half height of the tan δ peak is 20°C or lower, and

a value obtained from V_H - V_L is 10 mol% or less, wherein, when the polymer block (B) is divided into a first region to a sixth region in order from a polymerization start side, each region having an equal mass, V_H and V_L represent a highest value and a lowest value, respectively, of vinyl bond contents before hydrogenation of the first region to the sixth region.

[Claim 2]

The hydrogenated block copolymer according to claim 1, wherein

the content of the polymer block (C) is 3 to 15 % by mass, and a total content of the polymer block (C) and the polymer block (S) is 6 to 25 % by mass.

[Claim 3]

The hydrogenated block copolymer according to claim 1 or 2, wherein the hydrogenated block copolymer comprises two or more polymer blocks (B), and

a content of a polymer block (B-1) present at the end of the hydrogenated block copolymer based on the polymer blocks (B) is 1 to 10 % by mass.

[Claim 4]

The hydrogenated block copolymer according to any one of claims 1 to 3, wherein the polymer block (C) comprises butadiene, and the polymer block (B) comprises isoprene.

[Claim 5]

The hydrogenated block copolymer according to any one of claims 1 to 4, wherein the content of the polymer block (S) is 3 to 10 % by mass.

[Claim 6]

A hydrogenated block copolymer comprising, in a molecule thereof, a conjugated diene compound unit and a vinyl aromatic compound unit, wherein:

a content of the vinyl aromatic compound unit is 1 to 15 % by mass;

a degree of hydrogenation of the hydrogenated block copolymer is 80 mol% or more;

a butylene content and/or a propylene content is 50 to 95 mol% based on 100 mol% in total of the conjugated diene compound unit;

the hydrogenated block copolymer has a crystallization peak at -20 to 80°C and has a heat of crystallization of 0.1 to 10 J/g;

a Shore A hardness of the hydrogenated block copolymer is 15 to 65; and

a tan δ peak obtained by a dynamic viscoelasticity measurement (1 Hz) of the hydrogenated block copolymer is in a range of higher than -45°C and 10°C or lower, a height of the tan δ peak is 1.0 or more, and a width at half height of the tan δ peak is 20°C or lower,

the hydrogenated block copolymer comprises a polymer block (B), the polymer

block (B) having a conjugated diene compound as a main component and a vinyl bond content before hydrogenation of 60 to 100 mol%, and

a value obtained from V_H - V_L is 10 mol% or less, wherein, when the polymer block (B) is divided into a first region to a sixth region in order from a polymerization start side, each region having an equal mass, V_H and V_L represent a highest value and a lowest value, respectively, of vinyl bond contents before hydrogenation of the first region to the sixth region.

[Claim 7]

The hydrogenated block copolymer according to any one of claims 1 to 6, wherein the tan δ peak obtained by the dynamic viscoelasticity measurement (1 Hz) of the hydrogenated block copolymer is in the range of higher than -45°C and 10°C or lower, the height of the tan δ peak is 1.2 or more, and the width at half height of the tan δ peak is 18°C or lower.

[Claim 8]

The hydrogenated block copolymer according to any one of claims 1 to 7, wherein a total content of a component having a weight average molecular weight twice or more a peak weight average molecular weight and a component having a weight average molecular weight 0.5 times or less the peak weight average molecular weight is 15% or less.

[Claim 9]

A polypropylene resin composition comprising 10 to 90 % by mass of the hydrogenated block copolymer according to any one of claims 1 to 8 and 10 to 90 % by mass of a polypropylene resin, wherein

in a wide angle X ray diffractometry of the polypropylene resin composition, an intensity ratio of diffraction peak intensity (I14) at a scattering angle (2θ) of 14° to diffraction peak intensity (I15) at a scattering angle (2θ) of 15°, I14/I15, is 0.1 or more and less than 1.4.

[Claim 10]

The polypropylene resin composition according to claim 9 wherein in measurement by cross fractionation chromatography, an integral elution volume at -20°C or lower is 0.1% or more and less than 50% of a total volume, an integral elution volume in a range of higher than -20°C and lower than 60°C is 10% or more and less than 90% of the total volume, and an integral elution volume in a range of 60°C or higher and 150°C or lower is 10% or more and less than 90% of the total volume.

[Claim 11]

The polypropylene resin composition according to claim 9 or 10, wherein in measurement by cross fractionation chromatography, a molecular weight distribution (Mw/Mn) of an eluted component in a range of 10°C or higher and lower than 60°C is 1.05 or more and 1.50 or less.

[Claim 12]

A tube comprising the polypropylene resin composition according to any one of claims 9 to 11.

[Claim 13]

A sheet-shaped molding comprising the polypropylene resin composition according to any one of claims 9 to 11.

[Claim 14]

A tacky film comprising:

a substrate film; and

a tacky layer comprising the hydrogenated block copolymer according to any one of claims 1 to 8, the tacky layer being disposed on the substrate film.

[Claim 15]

The tacky film according to claim 14, wherein the tacky layer further comprises 0.5 to 50 % by mass of a tackifier.

[Claim 16]

A method for producing the hydrogenated block copolymer according to any

one of claims 1 to 8, comprising

a polymerization step of polymerizing a vinyl aromatic compound and a conjugated diene compound in a presence of a vinylating agent, an organolithium compound, and an alkali metal alkoxide under conditions where a molar ratio of the vinylating agent to the organolithium compound (vinylating agent/organolithium compound) is 0.2 or more and less than 3.0, and a molar ratio of the alkali metal alkoxide to the organolithium compound (alkali metal alkoxide/organolithium compound) is 0.01 or more and 0.3 or less.

[Claim 17]

The method for producing the hydrogenated block copolymer according to claim 16, wherein

in the polymerization step, difference in polymerization temperature in forming the polymer block (B) is within 20°C, and

wherein a value obtained from V_H - V_L is 10 mol% or less,

wherein, when the polymer block (B) is divided into a first region to a sixth region in order from a polymerization start side, each region having an equal mass, V_H and V_L represent a highest value and a lowest value, respectively, of vinyl bond contents before hydrogenation of the first region to the sixth region.