CLAIMS

[Claim 1]

A catalyst for a hydrogenation reaction, comprising 40-80 parts by weight of nickel, 0.01-5 parts by weight of copper, 1-10 parts by weight of sulfur, and 10-60 parts by weight of a silica support based on 100 parts by weight of the entire dried catalyst including a support.

[Claim 2]

The catalyst of claim 1, wherein the catalyst for the hydrogenation reaction has a degree of nickel reduction of 90% or more.

[Claim 3]

The catalyst of claim 1, wherein an average size of crystals of the nickel is 3-10 nm.

[Claim 4]

The catalyst of claim 1, wherein, in the catalyst particle size distribution, an average particle size is 3-10 μm, and a proportion of particles having a size of 1 μm or less is 0-10 vol%.

[Claim 5]

The catalyst of claim 1, wherein the catalyst has a specific surface area of 150-300 m^2/g.

[Claim 6]

The catalyst of claim 1, wherein the silica support is a porous support having a specific surface area of 200-400 m^2/g and a pore size of 10-30 nm.

[Claim 7]

The catalyst of claim 1, wherein the nickel forms a precipitate with the copper and the sulfur, is supported on the silica support, and is deposited and precipitated.

[Claim 8]

The catalyst of claim ~~2~~ 1, wherein the degree of nickel reduction is measured by ~~hydrogen temperature program reduction (~~H_2-TPR~~)~~ (Hydrogen-Temperature Program Reduction).

[Claim 9]

The catalyst of claim 1, wherein the catalyst has a hydrogen adsorption amount per sample weight in a range of 0.01-0.3 (mmol-H_2/g-catalyst) through an H_2-chemisorption measurement.

[Claim 10]

The catalyst of claim 1, wherein the catalyst has an electron absorption peak by Ni-S bond in a range of 159-166 eV (binding energy or bonding energy) through an X-ray photoelectron spectroscopy (XPS) analysis.

[Claim 11]

The catalyst of claim 1, wherein the hydrogenation reaction has a higher selectivity to olefin relative to aromatic.

[Claim 12]

The catalyst of claim 1, wherein a reactant of the hydrogenation reaction is a hydrocarbon resin.

[Claim 13]

The catalyst of claim 12, wherein, when the hydrogenation reaction is completed, the hydrocarbon resin has an APHA (American Public Health Association) value of 30 or less.

[Claim 14]

The catalyst of claim 1, wherein a reactant of the hydrogenation reaction is a hydrocarbon resin including dicyclopentadiene (DCPD).

[Claim 15]

The catalyst of claim 1, wherein a reactant of the hydrogenation reaction is a hydrocarbon resin including C5 fraction.

[Claim 16]

The catalyst of claim 1, wherein a reactant of the hydrogenation reaction is a hydrocarbon resin including C9 fraction.

[Claim 17]

The catalyst of claim 1, wherein the catalyst is at least one selected from a powder form, a particle form, and a granular form.

[Claim 18]

A method for preparing a catalyst for a hydrogenation reaction, the method comprising the steps of:

(a) preparing a first solution by dissolving, in a solvent, 40-80 parts by weight of nickel, 0.01-5 parts by weight of copper, and 10-60 parts by weight of a silica support based on 100 parts by weight of the entire dried catalyst including a support;

(b) adding the first solution to a precipitation container, stirring the first solution, and heating the first solution to a temperature of 60-100°C;

(c) after the heating, preparing a second solution by adding a pH control agent and a sulfur precursor in a precipitation container, and preparing a precipitate by adding the second solution dropwise to the first solution;

(d) washing and filtering the precipitate and drying the precipitate to prepare a dried product; and

(e) reducing the dried product in a hydrogen atmosphere to prepare a reduced product.

[Claim 19]

The method of claim 18, wherein a temperature of the hydrogen atmosphere is 200-500°C.

[Claim 20]

The method of claim 18, further comprising, after the step (d), sintering the prepared dried product in an air atmosphere.

[Claim 21]

The method of claim 20, wherein a temperature of the air atmosphere is 200-500°C.

[Claim 22]

The method of claim 18, further comprising passivating the reduced product with a nitrogen mixed gas including 0.1-20% oxygen.

[Claim 23]

The method of claim 18, further comprising passivating the reduced product by depositing the reduced product in an organic solvent.

[Claim 24]

The method of claim 18, wherein a pH in the step (c) of preparing the precipitate is 7-9.

[Claim 25]

The method of claim 18, wherein the heating and the drying in the step (d) is performed at 100-200°C for 5-24 hours.

[Claim 26]

A hydrogenation method for contacting a hydrocarbon resin with hydrogen in the presence of the catalyst for the hydrogenation reaction prepared by the method of any one of claims 18 to 25.

[Claim 27]

The hydrogenation method of claim 26, wherein the hydrocarbon resin comprises dicyclopentadiene (DCPD).

[Claim 28]

The hydrogenation method of claim 26, wherein, when the hydrocarbon resin contacts the hydrogen and the hydrogenation reaction is completed, the hydrocarbon resin has an APHA (American Public Health Association) value of 30 or less.