CLAIMS

[Claim 1] An etchant composition for etching of a layer to be etched that contains at least one metal,

the etchant composition comprising a nitric acid, a polyamine with a number average molecular weight of 300 or more, a nitrogen-containing basic compound with a molecular weight of less than 300, and water,

wherein the nitrogen-containing basic compound is at least one selected from the group consisting of alkylamine, alkanolamine, alicyclic amine, aromatic amine, and polyalkylene polyamine.

[Claim 2] The etchant composition according to claim 1, wherein a, b, and c satisfy $(a - c)^4/b \leq 600$, where a represents a blending amount (% by mass) of the nitric acid, b represents a blending amount (% by mass) of the polyamine with a number average molecular weight of 300 or more, and c represents a blending amount (% by mass) of the nitrogen-containing basic compound with a molecular weight of less than 300.

[Claim 3] The etchant composition according to claim 1 or 2, further comprising an acid other than the nitric acid.

[Claim 4] The etchant composition according to claim 3, wherein the acid other than the nitric acid is at least one selected from the group consisting of phosphoric acid, acetic acid, methoxyacetic acid, and ethoxyacetic acid.

[Claim 5] The etchant composition according to any one of claims 1 to 4, wherein the polyamine is at least one selected from the group consisting of polyalkyleneimine and a polymer with a constitutional unit derived from a compound having amino groups and an ethylenically unsaturated double bond.

[Claim 6] The etchant composition according to any one of claims 1 to 5, wherein the metal is at least one metal selected from the group consisting of tungsten, tantalum, zirconium, hafnium, molybdenum, niobium, ruthenium, osmium,

rhenium, rhodium, copper, nickel, cobalt, titanium, titanium nitride, alumina, aluminum, and iridium.

[Claim 7] An etching method comprising:

etching a layer to be etched that contains at least one metal with the etchant composition according to any one of claims 1 to 6.

[Claim 8] The etching method according to claim 7, wherein the etching method is used to etch metal in a manufacturing process of a semiconductor wafer.

[Claim 9] An etchant composition for etching of a layer to be etched that contains at least one metal,

the etchant composition provided by blending a nitric acid, a polyamine with a number average molecular weight of 300 or more, a nitrogen-containing basic compound with a molecular weight of less than 300, and water,

wherein the nitrogen-containing basic compound is at least one selected from the group consisting of alkylamine, alkanolamine, alicyclic amine, aromatic amine, and polyalkylene polyamine, and

wherein a, b, and c satisfy $(a - c)^4/b \leq 600$, where a represents a blending amount (% by mass) of the nitric acid, b represents a blending amount (% by mass) of the polyamine with a number average molecular weight of 300 or more, and c represents a blending amount (% by mass) of the nitrogen-containing basic compound with a molecular weight of less than 300.

[Claim 10] An etchant composition for etching of a layer to be etched that contains molybdenum,

the etchant composition comprising a nitric acid, a polyamine with a number average molecular weight of 300 or more, a nitrogen-containing basic compound with a molecular weight of less than 300, and water,

wherein the nitrogen-containing basic compound is at least one selected from the group consisting of alkylamine, alkanolamine, alicyclic amine, aromatic amine, and polyalkylene polyamine.

[Claim 11] An etching method comprising:

etching a layer to be etched that contains molybdenum with an etchant composition that contains a nitric acid, a polyamine with a number average molecular weight of 300 or more, a nitrogen-containing basic compound with a molecular weight of less than 300, and water,

wherein the nitrogen-containing basic compound is at least one selected from the group consisting of alkylamine, alkanolamine, alicyclic amine, aromatic amine, and polyalkylene polyamine.