CLAIMS

[Claim 1]

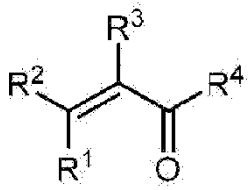
A methyl methacrylate-containing composition, comprising:

methyl methacrylate;

an α,β-unsaturated carbonyl compound represented by the following Formula (1) (component A1); and

a polymerization inhibitor (component B),

wherein the concentration of methyl methacrylate is from 99 to 99.99% by mass,



(1)

wherein, in Formula (1) above,

R^1, R^2, and R^3 each independently represent a hydrogen atom, an alkyl group, an alkenyl group, an aryl group, a hydroxy group, an alkoxy group, an amino group, a monovalent group containing a carbonyl group, an alkylthio group, or an arylthio group,

R^4 represents an alkyl group, an alkenyl group, an aryl group, a hydroxy group, an alkoxy group, an amino group, a monovalent group containing a carbonyl group, an alkylthio group, or an arylthio group,

R^1 and R^2, R^2 and R^3, and R^3 and R^4 each may be linked to each other to form a ring, except when R^1 = H, R^2 = H, R^3 = CH_3, and R^4 = OCH_3, that is, when the α,β-unsaturated carbonyl compound represented by Formula (1) is methyl methacrylate, and

H represents a hydrogen atom, C represents a carbon atom, and O represents an oxygen atom.

[Claim 2]

The methyl methacrylate-containing composition according to claim 1, wherein when the concentration of the component A1 is MA1 (μmol/L) and the concentration of the component B is MB (μmol/L), MB/MA1 is 0.1 or more.

[Claim 3]

The methyl methacrylate-containing composition according to claim 1 or 2, wherein when the concentration of the component A1 is MA1 (μmol/L), MA1 is from 1 to 85,000 μmol/L.

[Claim 4]

The methyl methacrylate-containing composition according to claim 3, wherein the MA1 is from 10 to 40,000 μmol/L.

[Claim 5]

The methyl methacrylate-containing composition according to any one of claims 1 to 4, wherein when the concentration of the component B is MB (μmol/L), MB is from 1 to 7,000 μmol/L.

[Claim 6]

The methyl methacrylate-containing composition according to claim 5, wherein the MB is from 10 to 5,000 μmol/L.

[Claim 7]

The methyl methacrylate-containing composition according to any one of claims 1 to 6, wherein the molecular weight of the component A1 is 1,000 or less.

[Claim 8]

The methyl methacrylate-containing composition according to any one of claims 1 to 7, wherein the component B is at least one polymerization inhibitor selected from the group consisting of a phenol compound, a quinone compound, a nitrobenzene compound, an N-oxyl compound, an amine compound, a phosphorus-containing

compound, a sulfur-containing compound, an iron-containing compound, a copper-containing compound, and a manganese-containing compound.

[Claim 9]

The methyl methacrylate-containing composition according to any one of claims 1 to 8, wherein the component B is at least one polymerization inhibitor selected from the group consisting of a phenol compound, an N-oxyl compound, an amine compound, a phosphorus-containing compound, and a sulfur-containing compound.

[Claim 10]

The methyl methacrylate-containing composition according to any one of claims 1 to 9, wherein the component B is at least one polymerization inhibitor selected from the group consisting of hydroquinone, 4-methoxyphenol, 2,4-dimethyl-6-t-butylphenol, 2,6-di-t-butyl-4-methylphenol, 4-hydroxy-2,2,6,6-tetramethylpiperidine-N-oxyl, N,N-diphenylamine, N-nitrosodiphenylamine, triphenyl phosphite, and phenothiazine.

[Claim 11]

The methyl methacrylate-containing composition according to claim 1, wherein in Formula (1) above, R^1, R^2, and R^3 are each independently a hydrogen atom, a C_{1-5} alkyl group, a C_{2-5} alkenyl group, a C_{1-12} aryl group, a C_{1-6} alkoxy group, an amino group, a monovalent group containing a carbonyl group, or a C_{1-5} alkylthio group; and R^4 is a C_{1-5} alkyl group, a C_{2-5} alkenyl group, a C_{1-12} aryl group, a hydroxy group, a C_{1-6} alkoxy group, an amino group, a monovalent group containing a carbonyl group, or a C_{1-5} alkylthio group.

[Claim 12]

The methyl methacrylate-containing composition

according to any one of claims 1 to 11, wherein in Formula (1) above,

R^1, R^2, and R^3 are each independently a hydrogen atom, or a C_{1-5} alkyl group, and

R^4 is a C_{1-5} alkyl group or a C_{1-5} alkoxy group.

[Claim 13]

The methyl methacrylate-containing composition according to any one of claims 1 to 12, wherein in Formula (1) above,

R^1, R^2, and R^3 are each independently a hydrogen atom, a methyl group, an ethyl group, an n-propyl group, or an isopropyl group, and

R^4 is a methyl group, a methoxy group, an ethoxy group, an n-propoxy group, an isopropoxy group, an n-butoxy group, an isobutoxy group, or an isopentoxy group.

[Claim 14]

The methyl methacrylate-containing composition according to any one of claims 1 to 13, wherein the concentration of methyl methacrylate is from 99.8 to 99.99% by mass.

[Claim 15]

The methyl methacrylate-containing composition according to any one of claims 1 to 14, wherein

the composition does not contain diacetyl, or

the concentration of diacetyl contained is 55 μmol/L or less.

[Claim 16]

A methyl methacrylate-containing composition, comprising:

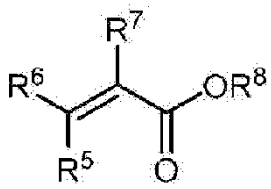
methyl methacrylate; and

an α,β-unsaturated carboxylate ester represented by the following Formula (2) (component A2), wherein

the concentration of methyl methacrylate is from 99

to 99.99% by mass, and

when the concentration of the component A2 is MA2 (μmol/L), MA2 is from 1 to 40,000 μmol/L;



(2)

wherein, in Formula (2) above,

R^5, R^6, and R^7 each independently represent a hydrogen atom, an alkyl group, an alkenyl group, an aryl group, a hydroxy group, an alkoxy group, an amino group, a monovalent group containing a carbonyl group, an alkylthio group, or an arylthio group,

R^8 represents an alkyl group, an alkenyl group, or an aryl group,

R^5 and R^6, R^6 and R^7, and R^7 and R^8 each may be linked to each other to form a ring, except when R^5 = H, R^6 = H, R^7 = CH_3, and R_8 = CH_3, that is, when the α,β-unsaturated carbonyl compound represented by Formula (2) is methyl methacrylate, and

H represents a hydrogen atom, C represents a carbon atom, and O represents an oxygen atom.

[Claim 17]

The methyl methacrylate-containing composition according to claim 16, wherein the MA2 is from 10 to 5,000 μmol/L.

[Claim 18]

The methyl methacrylate-containing composition according to claim 16 or 17, wherein the MA2 is from 10 to 500 μmol/L.

[Claim 19]

The methyl methacrylate-containing composition according to any one of claims 16 to 18, wherein the

molecular weight of the component A2 is 1,000 or less.

[Claim 20]

The methyl methacrylate-containing composition according to any one of claims 16 to 19, wherein in Formula (2) above,

R^5, R^6 and R^7 are each independently a hydrogen atom, a C_{1-5} alkyl group, a C_{2-5} alkenyl group, a C_{1-12} aryl group, a C_{1-6} alkoxy group, an amino group, a monovalent group containing a carbonyl group, or a C_{1-5} alkylthio group, and

R^8 is a C_{1-5} alkyl group, a C_{2-5} alkenyl group, or a C_{1-12} aryl group.

[Claim 21]

The methyl methacrylate-containing composition according to any one of claims 16 to 20, wherein in Formula (2) above,

R^5, R^6 and R^7 are each independently a hydrogen atom, or a C_{1-5} alkyl group, and

R^8 is a C_{1-5} alkyl group.

[Claim 22]

The methyl methacrylate-containing composition according to any one of claims 16 to 21, wherein in Formula (2) above,

R^5, R^6 and R^7 are each independently a hydrogen atom, a methyl group, an ethyl group, an n-propyl group, or an isopropyl group, and

R^8 is a methyl group, an ethyl group, an n-propyl group, an isopropyl group, an n-butyl group, an isobutyl group, or isopentyl group.

[Claim 23]

The methyl methacrylate-containing composition according to any one of claims 16 to 22, wherein in Formula (2) above,

R^5, R^6 and R^7 are each independently a hydrogen atom or a methyl group, and

R^8 is a methyl group.

[Claim 24]

The methyl methacrylate-containing composition according to any one of claims 16 to 23, wherein the concentration of methyl methacrylate is from 99.8 to 99.99% by mass.

[Claim 25]

The methyl methacrylate-containing composition of any one claims 16 to 24, wherein

the composition does not contain diacetyl, or

the concentration of diacetyl contained is 55 μmol/L or less.

[Claim 26]

A methyl methacrylate-containing composition, comprising:

methyl methacrylate; and

at least one compound (component A3) selected from the group consisting of methyl acrylate, butyl acrylate, ethyl methacrylate, methyl crotonate, methyl cis-crotonate, isobutyl methacrylate, butyl methacrylate, propyl methacrylate, isopentyl methacrylate, methyl 2-methylene-3-butenoate, methyl 3,3-dimethylacrylate, methyl 2-ethylacrylate, methyl 2-pentenoate, methyl cinnamate, methyl 3-methoxyacrylate, dimethyl fumarate, methyl 1-cyclohexene-1-carboxylate, methacrylamide, acrylic acid, crotonic acid, cis-crotonic acid, 3,3-dimethylacrylic acid, 2-ethylacrylic acid, 2-methylene-3-butenoic acid, and trans-3-hexen-2-one, wherein

the concentration of methyl methacrylate is from 99 to 99.99% by mass, and

when the concentration of the component A3 is MA3

(μmol/L), MA3 is from 1 to 40,000 μmol/L;

[Claim 27]

The methyl methacrylate-containing composition according to claim 26, wherein the MA3 is from 10 to 5,000 μmol/L.

[Claim 28]

The methyl methacrylate-containing composition according to claim 26 or 27, wherein the MA3 is from 10 to 500 μmol/L.

[Claim 29]

The methyl methacrylate-containing composition according to any one of claims 26 to 28, wherein the component A3 is at least one selected from the group consisting of methyl acrylate, methyl crotonate, acrylic acid, and crotonic acid.

[Claim 30]

The methyl methacrylate-containing composition according to any one of claims 26 to 29, wherein the concentration of methyl methacrylate is from 99.8 to 99.99% by mass.

[Claim 31]

The methyl methacrylate-containing composition according to any one of claims 26 to 30, wherein

the composition does not contain diacetyl, or

the concentration of diacetyl contained is 55 μmol/L or less.

[Claim 32]

A method of producing a methyl methacrylate polymer, comprising a step of polymerizing a polymeric composition comprising a methyl methacrylate-containing composition according to any one of claims 1 to 31.

[Claim 33]

The method of producing a methyl methacrylate

polymer according to claim 32, wherein the polymeric composition comprises 0.01 parts by mass or more of a monomer that can be copolymerized with methyl methacrylate with respect to 100 parts by mass of methyl methacrylate.