CLAIMS

[Claim 1]

An antimicrobial and algicidal method for a cooling water system characterized in that in a cooling water system subjected to an antimicrobial treatment using a chlorosulfamic acid and/or a chlorosulfamic acid salt, when algae are generated, an isothiazolone-based compound is further added to the cooling water system.

[Claim 2]

The antimicrobial and algicidal method for a cooling water system according to Claim 1, wherein a residual chlorine concentration of the chlorosulfamic acid and/or the chlorosulfamic acid salt in the cooling water system is 0.5 mg-Cl_2/L or more.

[Claim 3]

The antimicrobial and algicidal method for a cooling water system according to Claim 1 or 2, wherein an addition amount of the isothiazolone-based compound to the cooling water system is 0.1 to 1,000 mg/L.

[Claim 4]

The antimicrobial and algicidal method for a cooling water system according to Claim 1 or 2, wherein the chlorosulfamic acid and/or the salt thereof is N-chlorosulfamic acid, N,N-dichlorosulfamic acid, or a slat thereof.

[Claim 5]

The antimicrobial and algicidal method for a cooling water system according to Claim 1 or 2, wherein the chlorosulfamic acid salt is a sodium salt, a potassium salt, a calcium salt, a strontium salt, a barium salt, a manganese salt, copper salt, a zinc salt, an iron salt, a cobalt salt, a nickel salt, an ammonium salt, or a guanidine salt.

[Claim 6]

The antimicrobial and algicidal method for a cooling water system according to Claim 1 or 2, wherein the isothiazolone-based compound is at least one of 5-chloro-2-methyl-4-isothiazoline-3-one, 2-methyl-4-isothiazoline-3-one, 4,5-dichloro-2-methyl-4-isothiazoline-3-one, 2-ethyl-4-isothiazoline-3-one, 2-n-octyl-4-isothiazoline-3-one, 5-chloro-2-ethyl-4-isothiazoline-3-one, 5-chloro-2-t-octyl-4-isothiazoline-3-one, 4,5-dichloro-2-n-octyl-4-isothiazoline-3-one, 4,5-dichloro-2-cyclohexyl-4-isothiazoline-3-one, and 1,2-benzoisothiazoline-3-one.

[Claim 7]

An antimicrobial and algicidal agent containing an antimicrobial agent and an isothiazolone-based compound,

wherein the antimicrobial agent is one of the following a) to d)

a) a chlorine-based oxidizing agent and a sulfamic acid compound,

b) a chlorosulfamic acid,

c) a chlorosulfamic acid salt, and

d) a chlorosulfamic acid and a chlorosulfamic acid salt.

[Claim 8]

The antimicrobial and algicidal agent for a cooling water system according to Claim 7, wherein the antimicrobial and algicidal agent is a two-component type in which the antimicrobial agent and the isothiazolone-based compound are separated from each other.

[Claim 9]

The antimicrobial and algicidal agent for a cooling water system according to Claim 7 or 8, wherein the chlorosulfamic acid and/or the salt thereof is N-chlorosulfamic acid, N,N-dichlorosulfamic acid, or a slat thereof.

[Claim 10]

The antimicrobial and algicidal agent for a cooling water system according to Claim 7 or 8, wherein the chlorosulfamic acid salt is a sodium salt, a potassium salt, a calcium salt, a strontium salt, a barium salt, a manganese salt, copper salt, a zinc salt, an iron salt, a cobalt salt, a nickel salt, an ammonium salt, or a guanidine salt.

[Claim 11]

The antimicrobial and algicidal agent for a cooling water system according to Claim 7 or 8, wherein the

isothiazolone-based compound is at least one of 5-chloro-2-methyl-4-isothiazoline-3-one, 2-methyl-4-isothiazoline-3-one, 4,5-dichloro-2-methyl-4-isothiazoline-3-one, 2-ethyl-4-isothiazoline-3-one, 2-n-octyl-4-isothiazoline-3-one, 5-chloro-2-ethyl-4-isothiazoline-3-one, 5-chloro-2-t-octyl-4-isothiazoline-3-one, 4,5-dichloro-2-n-octyl-4-isothiazoline-3-one, 4,5-dichloro-2-cyclohexyl-4-isothiazoline-3-one, and 1,2-benzoisothiazoline-3-one.

[Claim 12]

The antimicrobial and algicidal agent according to Claim 7 or 8, wherein the chlorine-based oxidizing agent is at least one of a chlorine gas, chlorine dioxide, hypochlorous acid, a hypochlorite, chlorous acid, a chlorite, chloric acid, a chlorate, perchloric acid, a perchlorate, chlorinated isocyanuric acid, and a chlorinated isocyanurate.

Claims

[Claim 1]

An antimicrobial and algicidal method for a cooling water system characterized in that in a cooling water system subjected to an antimicrobial treatment using a chlorosulfamic acid and/or a chlorosulfamic acid salt, when algae including at least diatoms, green algae and blue-green algae are generated, an isothiazolone-based compound is further added to the cooling water system,

wherein a residual chlorine concentration derived from the chlorosulfamic acid and/or the chlorosulfamic acid salt in the cooling water system subjected to the antimicrobial treatment is 0.01 to 50 mg-Cl_2/L, and

wherein algae are generated, the residual chlorine concentration derived from the chlorosulfamic acid and/or the chlorosulfamic acid salt is adjusted to 0.5 to 20 mg-Cl_2/L, and the isothiazolone-based compound is added to the cooling water system at an amount of 2 to 1,000 mg/L.

[Claim 2]

The antimicrobial and algicidal method for a cooling water system according to Claim 1, wherein a residual chlorine concentration of the chlorosulfamic acid and/or the chlorosulfamic acid salt in the cooling water system is 0.5 mg-Cl_2/L or more.