Summary ~~of Invention~~

Technical Problem

[0007] A main object of the present technology is to provide a water treatment technology which exhibits an effect of hypobromous acid well when added to a water system.

Solution to Problem

[0008] As a result of a diligent study to solve the above-mentioned problem, the present inventors have found that it is possible to provide a water treatment technology which exhibits an effect of hypobromous acid well when added to a water system, leading to completion of the present technology.

That is, the present technology is as follows.

In an aspect, there is provided a water treatment agent, comprising the following components (a) to (c):

(a) 6 to 24% by mass of a chloramine compound,

(b) a bromide salt, and

(c) 1 to 18% by mass of a carboxyl group polymer having a carboxyl group content rate of 0.71 g-COOH/g-polymer or less in the polymer, wherein the (c) carboxyl group polymer is a maleic acid-based polymer and/or a (meth)acrylic acid-based polymer, and

having a pH of 10 or more.

[1] A water treatment agent comprising the following components (a) to (c) and having a pH of 10 or more:

(a) a chloramine compound,

(b) a bromide salt, and

(c) 1 to 18% by mass of a carboxyl group polymer having a carboxyl group content rate of 0.8 g-COOH/g-polymer or less in the polymer.

[2] The water treatment agent according to above [1], wherein a molar ratio of the chloramine compound to the bromide salt is 1:0.1 to 1.0.

[3] The water treatment agent according to above [1] or [2], wherein the water treatment agent is at least any of one for slime control, one for anticorrosion, or one for scale prevention.

[4] The water treatment agent according to any of above [1] to [3], wherein the (a) chloramine compound and the (b) bromide salt of the

a total chlorine detection rate after production is 95% or more, and a free chlorine content rate in a total chlorine concentration is 0.05% (as Cl_2) or less.

[13] The water treatment agent according to above [12], wherein the water treatment agent is obtained by mixing of a mixed solution obtained by mixing an alkali agent, a stabilizing agent, and a bromide salt, and of an oxidizing agent.

[14] The water treatment agent according to above [13], wherein a pH of the water treatment agent is 13 or more.

Advantageous Effects ~~of Invention~~

[0009] According to the present technology, it is possible to provide a water treatment technology which exhibits an effect of hypobromous acid well when added to a water system. The effect described here is not necessarily limited, and may be any of the effects described herein.

Brief Description of Drawings

[0010] [Fig. 1] Fig. 1 shows the change over time in the total oxidizing agent concentration in the water system (pH 8 to 9) when each of samples 1 to 4 was added. Sample 1: chloramine compound (×), sample 2: chloramine compound + bromide (Δ), sample 3: chloramine compound + carboxyl group polymer (□), and sample 4: chloramine compound + carboxyl group polymer + bromide (◊). The amount of a carboxyl group of the carboxyl group polymer is 0.77 g-COOH/g-polymer. The concentration when only the chloramine compound was added was set to 100%.

CLAIMS

[Claim 1]

A water treatment agent, comprising the following components (a) to (c) ~~and having a pH of 10 or more~~:

(a) 6 to 24% by mass of a chloramine compound,

(b) a bromide salt, and

(c) 1 to 18% by mass of a carboxyl group polymer having a carboxyl group content rate of ~~0.8~~0.71 g-COOH/g-polymer or less in the polymer, wherein the (c) carboxyl group polymer is a maleic acid-based polymer and/or a (meth)acrylic acid-based polymer, and

having a pH of 10 or more.

[Claim 2]

The water treatment agent according to claim 1, wherein a molar ratio of the chloramine compound to the bromide salt is 1:0.1 to 1.0.

[Claim 3]

The water treatment agent according to claim 1 or 2, wherein the water treatment agent is at least any of one for slime control, one for anticorrosion, or one for scale prevention.

[Claim 4]

The water treatment agent according to any of claims 1 to 3, wherein the (a) chloramine compound and the (b) bromide salt in the water treatment agent are obtained by mixing of a mixed solution obtained by mixing an alkali agent, a stabilizing agent, and a bromide salt, and of an oxidizing agent.

[Claim 5]

The water treatment agent according to any of claims 1 to 4, wherein the water treatment agent has a total chlorine detection rate after production of 95% or more and a free chlorine content rate in a total chlorine concentration of 0.05% (as Cl_2) or less.

~~[Claim 6]~~

~~A method of producing a water treatment agent, comprising mixing of a mixed solution obtained by mixing an alkali agent, a stabilizing agent, and a bromide salt, and of an oxidizing agent.~~

~~[Claim 7]~~

~~The method of producing a water treatment agent according to claim 6, wherein the stabilizing agent is a sulfamic acid compound.~~

~~[Claim 8]~~

~~The method of producing a water treatment agent according to claim 6 or 7, wherein the oxidizing agent is a chlorine-based oxidizing agent.~~

~~[Claim 9]~~

~~The method of producing a water treatment agent according to any of claims 6 to 8, wherein a pH of the mixed solution is 13 or more.~~

~~[Claim 10]~~

~~The method of producing a water treatment agent according to any of claims 6 to 9, wherein the mixed solution is obtained by mixing a powdered bromide salt as the bromide salt.~~

~~[Claim 11]~~

~~The method of producing a water treatment agent according to any of claims 6 to 10, wherein a carboxyl group polymer is further mixed in~~

~~such a way as to provide 1 to 18% by mass, and a carboxyl group content rate in the carboxyl group polymer is 0.8 g-COOH/g-polymer or less.~~

~~[Claim 12]~~

~~A water treatment agent comprising an alkali agent, a chloramine compound, and a bromide salt, wherein~~

~~a total chlorine detection rate after production is 95% or more, and a free chlorine content rate in a total chlorine concentration is 0.05% (as Cl_2) or less.~~

~~[Claim 13]~~

~~The water treatment agent according to claim 12, wherein the water treatment agent is obtained by mixing of a mixed solution obtained by mixing an alkali agent, a stabilizing agent, and a bromide salt, and of an oxidizing agent.~~

~~[Claim 14]~~

~~The water treatment agent according to claim 13, wherein a pH of the water treatment agent is 13 or more.~~