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.

In an aspect, there is provided 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, wherein

the mixed solution is prepared by mixing the stabilizing agent and the bromide salt into an aqueous solution adjusted to pH 13 or more with the alkali agent,

1.2 to 3 mol of the stabilizing agent is blended per mol of the oxidizing agent,

the stabilizing agent is a sulfamic acid compound,

the oxidizing agent is hypochlorous acid or a salt thereof, and

a pH of the water treatment agent is 13 or more.

That is, the present technology is as follows.

[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~~Disclosure

[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) 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.~~

~~[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 16]

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, wherein

the mixed solution is prepared by mixing the stabilizing agent and the bromide salt into an aqueous solution adjusted to pH 13 or more with the alkali agent,

1.2 to 3 mol of the stabilizing agent is blended per mol of the oxidizing agent,

the stabilizing agent is a sulfamic acid compound,

the oxidizing agent is hypochlorous acid or a salt thereof, and

a pH of the water treatment agent is 13 or more.

~~[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~~2]

The method of producing a water treatment agent according to ~~any of~~ claim~~s 6 to 9~~1, wherein the mixed solution is obtained by mixing a powdered bromide salt as the bromide salt.

[Claim ~~11~~3]

The method of producing a water treatment agent according to any of claims ~~6~~ 1 ~~to~~or ~~10~~2, 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.~~