CLAIMS

1. A combined chlorine agent consisting of an aqueous agent which comprises alkali consisting of alkali metal hydroxide, sulfamic acid, and oxidizing agent based on chlorine,

wherein the composition ratio of the oxidizing agent based on chlorine to the sulfamic acid is in the range from 0.45 to 0.6 by Cl / N (mole ratio),

the composition ratio of the oxidizing agent based on chlorine to alkali is in the range from 0.3 to 0.4 by Cl / alkali metal (mole ratio), and

free chlorine concentration in the aqueous agent is 2 % by weight or lower of total chlorine concentration.

2. The combined chlorine agent as claimed in claim 1, wherein the combined chlorine agent is used for slime control agent of a reverse osmosis membrane.

3. A method of producing the combined chlorine agent as claimed in claim 1 or 2, comprising

adding sulfamic acid to an aqueous solution of alkali consisting of alkali metal hydroxide to dissolve,

adding oxidizing agent based on chlorine to the obtained sulfamic acid · alkali aqueous mixture, and

mixing the finally obtained aqueous mixture to form an aqueous solution agent.

4. The method of producing the combined chlorine agent as claimed in claim 3, wherein the aqueous solution of alkali has a water content of 50 · 65 % by weight.

5 A method of chlorine treatment, comprising

adding the combined chlorine agent as claimed in claim 1 to

a water system so that free chlorine concentration is 0.1 mg/L or lower.

6. A method of chlorine treatment, comprising

adding the combined chlorine agent as claimed in claim 1 to a feed water system to a reverse osmosis membrane so that free chlorine concentration is 0.1 mg/L or lower.

Claims

1. A combined chlorine agent comprising an aqueous agent which comprises alkali comprising alkali metal hydroxide, sulfamic acid or salt thereof, and oxidizing agent based on chlorine,

wherein the composition ratio of the oxidizing agent based on chlorine to the sulfamic acid or salt thereof is in the range from 0.45 to 0.6 by Cl / N (mole ratio),

the composition ratio of the oxidizing agent based on chlorine to alkali is in the range from 0.3 to 0.4 by Cl / alkali metal (mole ratio),

the composition ratio of sulfamic acid or salt thereof to alkali in the aqueous solution agent is in the range from 0.5 to 0.7 by N / alkali metal (mole ratio),

amount of alkali metal contained in salt of sulfamic acid is calculated as alkali,

pH of the aqueous agent is 13 or more, and

free chlorine concentration in the aqueous agent is 1000 mg/L or lower and 2 % by weight or lower of total chlorine concentration.

2. The combined chlorine agent as claimed in claim 1, wherein the combined chlorine agent is used for slime control agent of a reverse osmosis membrane.

3. A method of producing the combined chlorine agent as claimed in claim 1 or 2, comprising

adding sulfamic acid or salt thereof to an aqueous solution of alkali comprising alkali metal hydroxide to dissolve,

adding oxidizing agent based on chlorine to the obtained sulfamic acid - alkali aqueous mixture, and

mixing the finally obtained aqueous mixture to form an aqueous solution agent,

wherein the composition ratio of the oxidizing agent based on chlorine to the sulfamic acid or salt thereof is in the range from 0.45 to 0.6 by Cl / N (mole ratio),

the composition ratio of the oxidizing agent based on chlorine to alkali is in the range from 0.3 to 0.4 by Cl / alkali metal (mole ratio),

the composition ratio of sulfamic acid or salt therof to alkali in the aqueous solution agent is in the range from 0.5 to 0.7 by N / alkali metal (mole ratio),

amount of alkali metal contained in salt of sulfamic acid is calculated as alkali,

pH of the aqueous agent is 13 or more, and

free chlorine concentration in the aqueous agent is 1000 mg/L or lower and 2 % by weight or lower of total chlorine concentration.

4. The method of producing the combined chlorine agent as claimed in claim 3, wherein the aqueous solution of alkali has a water content of 50 - 65 % by weight.

5 A method of chlorine treatment, comprising

adding the combined chlorine agent as claimed in claim 1 to a water system so that free chlorine concentration is 0.1 mg/L or lower and total chlorine concentration is 1 – 50 mg/L.

6. A method of chlorine treatment, comprising

adding the combined chlorine agent as claimed in claim 1 to a feed water system to a reverse osmosis membrane so that free chlorine concentration is 0.1 mg/L or lower and total chlorine concentration is 1 – 50 mg/L.