Claims

[Claim 1]

A washing treatment method for a chlorine-containing powder, comprising:

a chlorine-containing powder introduction step of accommodating a slurry that is formed by adding at least water to the chlorine-containing powder, in a treatment tank having a predetermined accommodation capacity;

a chlorine elution step of stirring the slurry that has been accommodated in the treatment tank, and eluting chlorine contained in the chlorine-containing powder in a liquid phase; and

a filtration/separation step of filtering some or all of the liquid phase out from the slurry after the chlorine has been eluted, and obtaining a desalinated cake, wherein

in the chlorine elution step, the slurry is stirred by a mixed stirring flow of a carbon-dioxide-containing gas and the slurry, which is formed by the gas that is blown into the slurry accommodated in the treatment tank, and circulates through a lower layer and an upper layer of the accommodated slurry while the gas entrains the slurry,

wherein the blow-in of the carbon-dioxide-containing gas into the slurry accommodated in the treatment tank is performed with a tubular air diffusion device,

the device having:

a cylindrical tube having a cylindrical shape with openings at both ends; and

a nozzle for transmitting the carbon dioxide-containing gas arranged at one end of the cylindrical tube,

wherein the tubular air diffusion device is provided in the treatment tank so that the nozzle is arranged on the lower side in the treatment tank, and

wherein the carbon-dioxide-containing gas is introduced into the inside of a cylinder of the cylindrical tube through the nozzle of the tubular air diffuser, and the slurry is sucked into the inside of the cylinder from the lower opening of the cylindrical tube, when introduced, it becomes a mixed jet flow of the gas and the slurry and is ejected from the upper opening of the cylindrical tube.

[Claim 2]

The washing treatment method for the chlorine-containing powder according to claim 1, wherein the treatment tank is configured so that the slurry accommodated in the treatment tank overflows in response to the chlorine-containing powder which is additionally introduced, and is discharged toward the filtration/separation step.

[Claim 3]

The washing treatment method for the chlorine-containing powder according to claim 1 or 2, wherein in the filtration/separation step, the liquid phase is separated by a filter press.

[Claim 4]

The washing treatment method for the chlorine-containing powder according to claim 1 or 2, wherein the chlorine-containing powder includes one or more types selected from the group consisting of incinerated fly ash, molten fly ash and cement kiln dust.

[Claim 5]

The washing treatment method for the chlorine-containing powder according to claim 1 or 2, wherein the washing treatment can be performed in response to the chlorine-containing powder which is continuously introduced.

[Claim 6]

A washing treatment system for a chlorine-containing powder, comprising:

a treatment tank having a predetermined accommodation capacity and configured to accommodate a slurry that is formed by adding at least water to the chlorine-containing powder;

a tubular air diffusion device that is additionally provided in the treatment tank and forms a mixed stirring flow of a carbon-dioxide-containing gas and the slurry, which is formed by the gas that is blown into the slurry accommodated in the treatment tank, and circulates through a lower layer and an upper layer of the accommodated slurry while the gas entrains the slurry; and

a filtration/separation device configured to filter some or all of the liquid phase out from the slurry taken out from the treatment tank, and obtain a desalinated cake,

wherein the blow-in of the carbon-dioxide-containing gas into the slurry accommodated in the treatment tank is performed with a tubular air diffusion device,

the device having:

a cylindrical tube having a cylindrical shape with openings at both ends; and

a nozzle for transmitting the carbon dioxide-containing gas arranged at one end of the cylindrical tube,

wherein the tubular air diffusion device is provided in the treatment tank so that the nozzle is arranged on the lower side in the treatment tank, and

wherein the carbon-dioxide-containing gas is introduced into the inside of a cylinder of the cylindrical tube through the nozzle of the tubular air diffuser, and the slurry is sucked into the inside of the cylinder from the lower opening of the cylindrical tube,

when introduced, it becomes a mixed jet flow of the gas and the slurry and is ejected from the upper opening of the cylindrical tube.

[Claim 7]

The washing treatment system for the chlorine-containing powder according to claim 6, wherein the treatment tank is configured so that the slurry accommodated in the treatment tank overflows in response to the chlorine-containing powder which is additionally introduced, and is discharged toward the filtration/separation device.

[Claim 8]

The washing treatment system for the chlorine-containing powder according to claim 6 or 7, wherein the filtration/separation device is a filter press.

[Claim 9]

The washing treatment system for the chlorine-containing powder according to claim 6 or 7, further comprising a conveying device configured to convey the obtained desalinated cake to a cement production facility.

[Claim 10]

The washing treatment system for the chlorine-containing powder according to claim 6 or 7, wherein the washing treatment can be performed in response to the chlorine-containing powder which is continuously introduced.