CLAIMS

1. A filtering operation method for filtering fine crystals contained in an oxidation reaction mother liquor obtained in a process for producing an aromatic carboxylic acid except for terephthalic acid by a cross-flow filtration using a ceramic filter while conducting a flowing circulation operation of the oxidation reaction mother liquor,

the method comprising:

conducting (I) an operation for filtering the fine crystals; and

conducting (II) a back washing operation with a filtrate while maintaining the flowing circulation operation of the oxidation reaction mother liquor, (II) the back washing operation with the filtrate being conducted under the following conditions:

(II-A) an operation time thereof that is in the range of from 5 to 60 [s];

(II-B) a differential pressure between a filtration side and a flow path side of the ceramic filter which is in the range of from 0.10 to 1.0 [MPa];

(II-C) a feeding linear velocity of the filtrate that is in the range of from 1.0 to 20 [m/h]; and

(II-D) a temperature of the filtrate that is in the range of from "a temperature of the oxidation reaction mother liquor" to "a temperature higher by 35°C than that of the oxidation reaction mother liquor".

2. The filtering operation method according to claim 1, wherein (I) the operation for filtering the fine crystals is carried out under the following conditions:

(I-A) an operation time thereof that is in the range of from 60 to 1800 [s];

(I-B) a differential pressure between the flow path side and the filtration side that is in the range of from 0.05 to 0.5 [MPa];

(I-C) a circulating linear velocity of the oxidation reaction mother liquor in the flow path of the ceramic filter that is in the range of from 1000 to 10000 [m/h] as measured at an inlet of the flow path; and

(I-D) a filtering linear velocity of the filtrate that is in the range of from

0.5 to 3.0 [m/h].

3. The filtering operation method according to claim 1 or 2, further comprising: conducting (III) a back washing operation with a wash solvent while maintaining the flowing circulation operation of the oxidation reaction mother liquor.

4. The filtering operation method according to claim 3, wherein (III) the back washing operation with the wash solvent is conducted under the following conditions:

(III-A) an operation time thereof that is in the range of from 5 to 120 [s];

(III-B) a differential pressure between the filtration side and the flow path side upon the back washing operation with the wash solvent that is in the range of from 0.10 to 1.0 [MPa];

(III-C) a feeding linear velocity of the wash solvent upon the back washing operation that is in the range of from 1.0 to 20 [m/h]; and

(III-D) a temperature of the wash solvent that is in the range of from " the temperature of the oxidation reaction mother liquor" to "the temperature higher by 35°C than that of the oxidation reaction mother liquor".

5. The filtering operation method according to claim 3 or 4, wherein an operation comprising (I) the operation for filtering the fine crystals and (II) the back washing operation with the filtrate is repeated, and

when a flow rate of the filtering operation is not restored by (II) the back washing operation with the filtrate, (III) the back washing operation with the wash solvent is conducted.

6. The filtering operation method according to any one of claims 3 to 5, wherein the wash solvent is acetic acid having a water content of from 0.1 to 30% by mass.

7. The filtering operation method according to any one of claims 1 to 6, wherein

upon the back washing operation with the filtrate, a pressure on a circulation outlet conduit side of the ceramic filter is reduced to produce a differential pressure, thereby feeding the filtrate.

8. The filtering operation method according to any one of claims 1 to 7, wherein the aromatic carboxylic acid comprises at least one of benzoic acid, phthalic acid, isophthalic acid, m-toluic acid, trimesic acid, 3,5-dimethyl benzoic acid, trimellitic acid, pyromellitic acid, 1,5-naphthalenedicarboxylic acid and 2,6-naphthalenedicarboxylic acid.

CLAIMS

1. A filtering operation method for filtering fine crystals contained in an oxidation reaction mother liquor having a temperature of from 50 to 115°C obtained in a a process for producing an aromatic carboxylic acid except for terephthalic acid by a cross-flow filtration using a ceramic filter while conducting a flowing circulation operation of the oxidation reaction mother liquor,

the method comprising:

conducting (I) an operation for filtering the fine crystals; and

conducting (II) a back washing operation with a filtrate while maintaining the flowing circulation operation of the oxidation reaction mother liquor, (II) the back washing operation with the filtrate being conducted under the following conditions:

(II-A) an operation time that is in the range of from 10 to 40 [s];

(II-B) a differential pressure between a filtration side and a flow path side that is in the range of from 0.10 to 1.0 [MPa];

(II-C) a feeding linear velocity of the filtrate that is in the range of from 1.0 to 20 [m/h]; and

(II-D) a temperature of the filtrate that is in the range of from "a temperature of the oxidation reaction mother liquor" to "a temperature higher by 35°C than that of the oxidation reaction mother liquor",

wherein (II) the back washing operation is conducted after (I) the operation for filtering the fine crystals,

wherein (I) the operation for filtering the fine crystals is conducted under the following conditions:

(I-A) an operation time that is in the range of from 60 to 1800 [s].

2. The filtering operation method according to claim 1, wherein (I) the operation for filtering the fine crystals is conducted under the following conditions:

(I-B) a differential pressure between the flow path side and the filtration side that is in the range of from 0.05 to 0.5 [MPa];

(I-C) a circulating linear velocity of the oxidation reaction mother liquor in the flow path of the ceramic filter that is in the range of from 1000 to 10000 [m/h] at an inlet of the flow path; and

(I-D) a filtering linear velocity of the filtrate that is in the range of from 0.5 to 3.0 [m/h].

3. The filtering operation method according to claim 1 or 2, further comprising: conducting (III) a back washing operation with a wash solvent while maintaining the flowing circulation operation of the oxidation reaction mother liquor.

4. The filtering operation method according to claim 3, wherein (III) the back washing operation with the wash solvent is conducted under the following conditions:

(III-A) an operation time thereof that is in the range of from 5 to 120 [s];

(III-B) a differential pressure between the filtration side and the flow path side upon the back washing operation with the wash solvent that is in the range of from 0.10 to 1.0 [MPa];

(III-C) a feeding linear velocity of the wash solvent upon the back washing operation that is in the range of from 1.0 to 20 [m/h]; and

(III-D) a temperature of the wash solvent that is in the range of from " the temperature of the oxidation reaction mother liquor" to "the temperature higher by 35°C than that of the oxidation reaction mother liquor".

5. The filtering operation method according to claim 3 or 4, wherein an operation comprising (I) the operation for filtering the fine crystals and (II) the back washing operation with the filtrate is repeated, and

when a flow rate of the filtering operation is not restored by (II) the back washing operation with the filtrate, (III) the back washing operation with the wash solvent is conducted.

6. The filtering operation method according to any one of claims 3 to 5, wherein the wash solvent is acetic acid having a water content of from 0.1 to 30% by mass.

7. The filtering operation method according to any one of claims 1 to 6, wherein

upon the back washing operation with the filtrate, a pressure on a circulation outlet conduit side of the ceramic filter is reduced to produce a differential pressure, thereby feeding the filtrate.

8. The filtering operation method according to any one of claims 1 to 7, wherein the aromatic carboxylic acid comprises at least one of benzoic acid, phthalic acid, isophthalic acid, m-toluic acid, trimesic acid, 3,5-dimethyl benzoic acid, trimellitic acid, pyromellitic acid, 1,5-naphthalenedicarboxylic acid and 2,6-naphthalenedicarboxylic acid.