CLAIMS

[Claim 1]

A method for purifying methacrylic acid, comprising:

mixing raw material methacrylic acid and methanol;

precipitating a crystal of methacrylic acid from a mixed solution comprising the raw material methacrylic acid and methanol; and

separating the crystal and mother liquor,

wherein the raw material methacrylic acid and methanol are mixed so that a concentration of methanol in the mixed solution is 3.0 to 3.75% by mass, and

the crystal of methacrylic acid is precipitated from the mixed solution in a cooling crystallization vessel.

[Claim 2]

The method for purifying methacrylic acid according to claim 1, wherein the raw material methacrylic acid has a purity of 99.00% by mass or more.

[Claim 3]

The method for purifying methacrylic acid according to claim 1, wherein a temperature in the cooling crystallization vessel is controlled in the range of 4 to 8°C.

[Claim 4]

The method for purifying methacrylic acid according to claim 3, wherein the raw material methacrylic acid has a purity of 99.00% by mass or more.

[Claim 5]

The method for purifying methacrylic acid according to claim 1, wherein the raw material methacrylic acid and methanol are mixed so that the concentration of methanol in the mixed solution is 3.0 to 3.75% by mass, and then the mixed solution is supplied to the cooling crystallization vessel.

[Claim 6]

The method for purifying methacrylic acid according to claim 5, wherein the mixed solution is continuously supplied to the cooling crystallization vessel.

[Claim 7]

The method for purifying methacrylic acid according to claim5, wherein the mixed solution at 9 to 20°C is supplied to the cooling crystallization vessel.

[Claim 8]

The method for purifying methacrylic acid according to claim 7, wherein the raw material methacrylic acid has a purity of 99.00% by mass or more.

[Claim 9]

The method for purifying methacrylic acid according to claim 1, wherein the cooling crystallization vessel comprises a baffle-equipped cylindrical container equipped with a cooling jacket, and

the cooling crystallization vessel comprises, inside the cylindrical container:

a scraper unit for scraping a crystal precipitated on an inner surface of the cylindrical container,

a rotating shaft, and

an anchor-shaped scraper arm linking the rotating shaft and the scraper unit.

[Claim 10]

The method for purifying methacrylic acid according to claim 9 wherein the scraper unit comprises:

a scraper blade for scraping a crystal precipitated on an inner surface of the cylindrical container;

a scraper blade holder comprising a blade supporting portion supporting the scraper blade, and an arm coupling portion fixed to the scraper arm; and

a spring type pressing apparatus for pressing the scraper blade against the inner surface of the cylindrical container via the blade supporting portion.

[Claim 11]

The method for purifying methacrylic acid according to claim 10, wherein a lower

portion of the scraper arm comprises a flat paddle blade portion, and

the lower portion of the scraper arm has a portion in which a length of the flat paddle blade portion in an axial direction of the cylindrical container shortens gradually from the rotating shaft toward a direction of a side surface of the cylindrical container.

[Claim 12]

The method for purifying methacrylic acid according to claim 11, wherein the raw material methacrylic acid has a purity of 99.00% by mass or more.

[Claim 13]

A method for producing methacrylic acid, comprising the steps of:

forming raw material methacrylic acid; and

purifying the raw material methacrylic acid by the method according to any one of claims 1 to 12.

[Claim 14]

The method for producing methacrylic acid according to claim 13, comprising a step of subjecting, to solid-liquid separation, a suspension slurry formed in the step of purifying the raw material methacrylic acid, and purifying an obtained solid by a high purity operation.