CLAIMS

[Claim 1]

A method for purifying methacrylic acid, comprising:

crystallizing methacrylic acid, using crude methacrylic acid as a raw material having a maleic acid concentration of no greater than 2000 ppm by mass and an acrylic acid concentration of no greater than 2000 ppm by mass, and setting a slurry temperature at -10~10°C.

[Claim 2]

The method for purifying methacrylic acid according to Claim 1, wherein a suspension-type jacked-cooled crystallization vessel is used as a crystallization device, and the absolute value of the difference between the crystal deposition temperature and the temperature of the cooling medium in the jacket is set at 15°C or lower.

[Claim 3]

The method for purifying methacrylic acid according to Claim 1 or 2, wherein the crystal deposition rate constant "K" defined in Formula (4) below is set to be 1.5 times the constant when the maleic acid concentration is 6300 ppm by mass.

$$w_C = w^*_C - w^*_C \exp\left(-\frac{K\theta}{w^*_C}\right) \qquad (4)$$

(in Formula (4), "w_C" is the amount [g] of deposited methacrylic acid crystals, "θ" is elapsed time [s], "K" is the crystal deposition rate constant [g/s], and "w^*_C" is the amount [g] of crystals deposited from saturated methacrylic acid.)

[Claim 4]

The method for purifying methacrylic acid according to any one of Claims 1 to 3, further comprising reducing the maleic acid concentration and the acrylic acid concentration in the crude methacrylic acid by conducting at least either distillation or extraction before performing the purification process.

[Claim 5]

The method for purifying methacrylic acid according to any one of Claims 1 through 4, wherein the total concentration of impurities calculated by excluding maleic acid and acrylic acid contained in the crude methacrylic acid is set to be no greater than 7000 ppm by mass.

CLAIMS

The invention claimed is:

1. A method for purifying methacrylic acid, comprising:
crystallizing methacrylic acid, using crude methacrylic acid as a raw material having a maleic acid concentration of no greater than 2000 ppm by mass and an acrylic acid concentration of no greater than 180 ppm by mass, and setting a slurry temperature at −10~10° C., wherein a suspension-type jacked-cooled crystallization vessel is used as a crystallization device, and an absolute value of the difference between a crystal deposition temperature and a temperature of a cooling medium in the jacket is set at 15° C. or lower.

2. The method for purifying methacrylic acid according to claim 1, wherein a crystal deposition rate constant "K" defined in Formula (4) below is set to be 1.5 times the constant when the maleic acid concentration is 6300 ppm by mass:

$$w_c = w_c^* - w_c^* \exp\left(-\frac{K\theta}{w_c^*}\right), \qquad (4)$$

wherein in Formula (4), "w_C" is the amount [g] of deposited methacrylic acid crystals, "θ" is elapsed time [s], "K" is the crystal deposition rate constant [g/s], and "w^*_C" is the amount [g] of crystals deposited from saturated methacrylic acid.

3. The method for purifying methacrylic acid according to claim 1, further comprising reducing the maleic acid concentration and the acrylic acid concentration in the crude methacrylic acid by conducting at least distillation or extraction before performing a purification process.

4. The method for purifying methacrylic acid according to claim 1, wherein a total concentration of impurities calculated by excluding maleic acid and acrylic acid contained in the crude methacrylic acid is set to be no greater than 7000 ppm by mass.

5. The method for purifying methacrylic acid according to claim 2, further comprising reducing the maleic acid concentration and the acrylic acid concentration in the crude methacrylic acid by conducting at least distillation or extraction before performing a purification process.

6. The method for purifying methacrylic acid according to claim 2, wherein a total concentration of impurities calculated by excluding maleic acid and acrylic acid contained in the crude methacrylic acid is set to be no greater than 7000 ppm by mass.

7. The method for purifying methacrylic acid according to claim 3, wherein a total concentration of impurities calculated by excluding maleic acid and acrylic acid contained in the crude methacrylic acid is set to be no greater than 7000 ppm by mass.