CLAIMS

1. A method of producing a (meth)acrylic resin composition, wherein the method comprises the steps of:

continuously feeding a reaction raw material comprising a chain transfer agent, a radical polymerization initiator and a monomer mixture comprising 80 to 100 % by mass of methyl methacrylate and 20 to 0 % by mass of an alkyl acrylate to one tank reactor through two or more feeding ports;

bulk polymerizing the monomer mixture in the tank reactor until a polymerization conversion of 40 to 70 % by mass to prepare a reaction product; and

removing the monomer mixture from the reaction product,

wherein the perfect mixing time (θ_M [hr]) of the tank reactor, the half-life ($\tau_{1/2}$ [hr]) of the radical polymerization initiator at the temperature in the tank reactor, the stirring power (P_V [kW/m^3]) of the tank reactor, the mean residence time (θ [hr]) of the reaction raw material in the tank reactor, and the concentration (I [ppm]) of the radical polymerization initiator in the reaction raw material satisfy the following relationships:

$\theta_M > \tau_{1/2}$, and

$P_V \times \theta \times I \times \tau_{1/2} < 4$.

2. The method according to Claim 1, wherein the temperature in the tank reactor is 110°C to 160°C; and

the half-life of the radical polymerization initiator at the temperature in the tank reactor is 0.5 to 120 seconds.

3. The method according to Claim 1 or 2, wherein the step of removing the monomer mixture is performed by adiabatic flash evaporation.

4. The method according to any one of Claims 1 to 3, wherein the reaction solution in the tank reactor has a water content of 1000 ppm or less.

Claims

1. A method of producing a (meth)acrylic resin composition, wherein the method comprises the steps of:

continuously feeding a reaction raw material to one tank reactor having two or more feeding ports through the two or more feeding ports, wherein the reaction raw material comprises a chain transfer agent, a radical polymerization initiator and a monomer mixture, the monomer mixture comprises 80 to 100% by mass of methyl methacrylate and 20 to 0% by mass of an alkyl acrylate, a stirring power of the tank reactor is preferably 0.2 to 7 kW/m^3, a half-life of the radical polymerization initiator at the temperature in the tank reactor is 0.5 to 120 seconds, a mean residence time of the reaction raw material in the tank reactor is 1 to 5 hours, and the amount of the polymerization initiator used is within a range of 0.001 to 0.01 part by mass based on 100 parts by mass of the monomer mixture;

bulk polymerizing the monomer mixture in the tank reactor until a polymerization conversion of 40 to 70% by mass to prepare a reaction product; and

removing the monomer mixture from the reaction product,

wherein the perfect mixing time (θ_M [hr]) of the tank reactor, the half-life ($\tau_{1/2}$ [hr]) of the radical polymerization initiator at the temperature in the tank

reactor, the stirring power (P_V [kW/m^3]) of the tank reactor, the mean residence time (θ [hr]) of the reaction raw material in the tank reactor, and the concentration (I [ppm]) of the radical polymerization initiator in the reaction raw material satisfy the following relationships:

$\theta_M > \tau_{1/2}$, and

$P_V \times \theta \times I \times \tau_{1/2} < 4$ [kW/m^3.ppm.hr^2].

2. The method according to Claim 1, wherein the temperature in the tank reactor is 110°C to 160°C.

3. The method according to Claim 1 or 2, wherein the step of removing the monomer mixture is performed by adiabatic flash evaporation.

4. The method according to any one of Claims 1 to 3, wherein the reaction solution in the tank reactor has a water content of 1000 ppm or less.