Claims

1. A method for polymerizing ethylenically unsaturated monomers by radically initiated emulsion polymerization in aqueous medium in a polymerization reactor, where the internal walls, and optionally internals, of said reactor are coated, before the reactor is filled, by application of a scale inhibitor which precipitates on the treatment with an acid solution, characterized in that the surfaces to be coated with scale inhibitor are treated with an acid solution, wherein first the acid solution is applied to the areas that are to be coated, and subsequently the scale inhibitor, or wherein first the scale inhibitor is applied and subsequently the acid solution.

2. The method as claimed in claim 1, characterized in that a scale inhibitor is used from the group containing condensation products of formaldehyde with naphthol compounds, condensation products of a naphthol compound and a sulfoxylate, condensation products of a naphthol compound and an aldehyde and an aromatic carboxylic acid which is hydroxylated on the aromatic nucleus.

3. The method as claimed in claim 1 or 2, characterized in that before the reactor is filled with the constituents of the polymerization mixture and before and/or after the scale inhibitor is applied, the walls of the polymerization reactor and optionally the internals of the polymerization reactor are treated with an aqueous solution of an inorganic or organic acid.

4. The method as claimed in claim 1 to 3, characterized in that an inorganic or organic acid having a pKa of $pKa \leq 5$ is used.

5. The method as claimed in claim 1 to 4, characterized in that the aqueous solution of the scale inhibitor is applied in one step or in a plurality of steps.

6. The method as claimed in claim 1 to 5, characterized in that the application of the scale inhibitor and/or of the aqueous acid solution is repeated in each case.

7. The method as claimed in claim 1 to 6, characterized in that the polymerization is operated batchwise.

8. The method as claimed in claim 1 to 6, characterized in that the polymerization is operated continuously.

9. The method as claimed in claim 1 to 8, characterized in that vinyl acetate and optionally further comonomers copolymerizable with vinyl acetate are polymerized.