Claims

1. Process to prepare a powdery additive suitable for improving adhesion of building material compositions to substrates having a surface energy of 50 mJ/m^2 or lower, measured according to DIN 55660-2:2011-12, the additive comprising a solid polysaccharide and a plasticizer, wherein the plasticizer is liquid at 50°C or lower, has a boiling point of 100°C or higher and is selected from the group of esters, ketones, aldehydes, carbonates, aromatic compounds, heteroaromatic compounds, heterocyclic compounds, halogenated hydrocarbons, cyclic unsaturated compounds, terpenes, sulfates and sulfoxides, comprising the steps of
   a) admixing the plasticizer to an aqueous medium containing the polysaccharide followed by drying the admixture, or
   b) preparing a first particle comprising the plasticizer by (i) adsorbing the plasticizer onto a solid carrier, or emulsifying the plasticizer with a synthetic water-soluble polymer in water and subsequently drying the emulsion, and (ii) mixing this first particle with a second particle comprising the polysaccharide wherein the mean particle size of the coarser of the first and second particle is not more than 10 times the mean particle size of the finer particle, or agglomerating this first particle and this second particle into one particle.

2. Process of claim 1, wherein the polysaccharide is a polysaccharide ether containing alkyl, carboxyalkyl and/or hydroxyalkyl groups, a dextrine, cold-water soluble starch or a derivative thereof.

3. Process of claim 2, wherein the polysaccharide ether is a cellulose ether or a guar ether, wherein the alkyl group is a methyl, ethyl and/or propyl group, the carboxyalkyl group is a carboxymethyl and/or carboxyethyl group and/or the hydroxyalkyl group is a hydroxyethyl and/or hydroxypropyl group.

4. Process of any one of claims 1 to 3, wherein the plasticizer has a solubility parameter δ at 25°C between 22.5 $MPa^{1/2}$ and 11 $MPa^{1/2}$.

5. Process of any one of claims 1 to 4, wherein the weight ratio of the plasticizer to the polysaccharide is between 90 : 10 and 1 : 99.

6. Process of any one of claims 1 to 5, wherein the carrier has a BET surface area, measured according to ISO 5794-1, of at least 10 m^2/g.

7. Process of any one of claims 1 to 6, wherein the synthetic water-soluble polymer is selected from the group of fully or partially saponified polyvinyl alcohols and their derivatives, polyvinyl pyrrolidone, polyvinyl acetal, melamine formaldehyde sulfonates, naphthalene formaldehyde sulfonates, polymerizates of propylene oxide and/or ethylene oxide, including their copolymerizates and block copolymerizates, styrene-maleic acid and vinyl ether-maleic acid copolymerizates.

8. Process of any one of claims 1 to 7, wherein the sum of the polysaccharide weight and of the plasticizer weight is at least 10 wt.% based on the total weight of the additive.

9. Additive obtainable by the process of any one of claims 1 to 8.

10. Use of the additive of claim 9 in building material compositions to increase adhesion to a substrate having a surface energy of 50 mJ/m^2 or lower, measured according to DIN 55660-2:2011-12.

11. Use according to claim 10, wherein the substrate having a surface energy of 50 mJ/m^2 or lower is a substrate containing polystyrene, polyolefine, polyvinyl chloride, linoleum and/or bitumen.

12. Building material composition comprising the additive of claim 9, a filler, a mineral binder and/or a water-insoluble polymer-binder.

13. Process to adhere building material compositions to substrates having a surface energy of 50 mJ/m^2, measured according to DIN 55660-2:2011-12, comprising the step of adding the additive of claim 9 to the building material composition, optionally adding and mixing with a solvent or solvent mixture, applying the obtained composition onto the difficult-to-adhere substrate, and allowing it to dry.

Claims

1. Process to prepare a powdery additive suitable for improving adhesion of building material compositions to substrates having a surface energy of 50 mJ/m^2 or lower, measured according to DIN 55660-2:2011-12, the additive comprising a solid polysaccharide and a plasticizer, wherein the plasticizer is liquid at 50°C or lower, has a boiling point of 100°C or higher and is selected from the group of esters, ketones, aldehydes, carbonates, aromatic compounds, heteroaromatic compounds, heterocyclic compounds, halogenated hydrocarbons, cyclic unsaturated compounds, terpenes, sulfates and sulfoxides, comprising the steps of

   a) admixing the plasticizer to an aqueous medium containing the polysaccharide followed by drying the admixture, or

   b) preparing a first particle comprising the plasticizer by (i) adsorbing the plasticizer onto a solid carrier, or emulsifying the plasticizer with a synthetic water-soluble polymer in water and subsequently drying the emulsion, and (ii) mixing this first particle with a second particle comprising the polysaccharide wherein the mean particle size of the coarser of the first and second particle is not more than 10 times the mean particle size of the finer particle, or agglomerating this first particle and this second particle into one particle, and

   wherein the polysaccharide is a polysaccharide ether containing alkyl, carboxyalkyl and/or hydroxyalkyl groups, a dextrine, cold-water soluble starch or a derivative thereof, and wherein the sum of the polysaccharide weight and of the plasticizer weight is at least 10 wt.% based on the total weight of the additive.

2. Process of claim 1, wherein the polysaccharide ether is a cellulose ether or a guar ether, wherein the alkyl group is a methyl, ethyl and/or propyl group, the carboxyalkyl group is a carboxymethyl and/or carboxyethyl group and/or the hydroxyalkyl group is a hydroxyethyl and/or hydroxypropyl group.

3. Process of any one of claims 1 to 2, wherein the plasticizer has a solubility parameter δ at 25°C between 22.5 $MPa^{1/2}$ and 11 $MPa^{1/2}$.

4. Process of any one of claims 1 to 3, wherein the weight ratio of the plasticizer to the polysaccharide is between 90 : 10 and 1 : 99.

5. Process of any one of claims 1 to 4, wherein the carrier has a BET surface area, measured according to ISO 5794-1, of at least 10 m^2/g.

6. Process of any one of claims 1 to 5, wherein the synthetic water-soluble polymer is selected from the group of fully or partially saponified polyvinyl alcohols and their derivatives, polyvinyl pyrrolidone, polyvinyl acetal, melamine formaldehyde sulfonates, naphthalene formaldehyde sulfonates, polymerizates of propylene oxide and/or ethylene oxide, including their copolymerizates and block copolymerizates, styrene-maleic acid and vinyl ether-maleic acid copolymerizates.

7. Additive obtainable by the process of any one of claims 1 to 6.

8. Use of the additive of claim 7 in building material compositions to increase adhesion to a substrate having a surface energy of 50 mJ/m^2 or lower, measured according to DIN 55660-2:2011-12.

9. Use according to claim 8, wherein the substrate having a surface energy of 50 mJ/m^2 or lower is a substrate containing polystyrene, polyolefine, polyvinyl chloride, linoleum and/or bitumen.

10. Building material composition comprising the additive of claim 7, a filler, a mineral binder and/or a water-insoluble polymer-binder.

11. Process to adhere building material compositions to substrates having a surface energy of 50 mJ/m^2, measured according to DIN 55660-2:2011-12, comprising the step of adding the additive of claim 7 to the building material composition, optionally adding and mixing with a solvent or solvent mixture, applying the obtained composition onto the difficult-to-adhere substrate, and allowing it to dry.