[Brief description of the disclosure]

[022a] In one aspect, the present disclosure refers to a polymer composition (PC1) comprising

a) a polymer (A1) having a glass transition temperature of less than 10°C,

b) a polymer (B1) having a glass transition temperature of at least 60°C, and

c) a polymer (C1) having a glass transition temperature of at least 30°C, said polymer (C1) represents at most 40wt% of a composition based on a), b) and c) only,

characterized in that at least the component a) and the component b) of composition (PC1) are part of a multistage polymer (MP1),

and characterized in that the polymer (C1) has a mass average molecular weight Mw between 10 000g/mol and 500 000g/mol

and characterized in that either the polymer (B1) and the polymer (C1) comprise monomer units comprising an alicyclic hydrocarbon group with a carbon number from 3 to 20 or in that the polymer (B1) and the polymer (C1) comprise monomer units from polymerized comonomers (Mc_{b1}) and (Mc_{c1}) respectively both comonomers having a Hansen solubility parameter δ_p <10 $MPa^{1/2}$.

[023] Surprisingly it has been found that a polymer composition (PC1) comprising

a) a polymer (A1) having a glass transition temperature of less than 10°C,

b) a polymer (B1) having a glass transition temperature of at least 60°C, and

c) a polymer (C1) having a glass transition temperature of at least 30°C, said polymer (C1) represents at most 40wt% of a composition based on a), b) and c) only,

characterized in that at least the component a) and the component b) of composition (PC1) are part of a multistage polymer (MP1),

and in that the polymer (C1) has a mass average molecular weight Mw between 10 000g/mol and 500 000g/mol,

and in that the polymer (B1) and the polymer (C1) comprise monomer units comprising an alicyclic hydrocarbon group with a carbon number from 3 to 20; yields to a polymer composition that can be easily

dispersed in low polar liquid compositions and yielding to a liquid composition possessing a lower viscosity compared to a liquid composition with a polymer composition comprising no monomer units comprising an alicyclic hydrocarbon group with a carbon number from 3 to 20.

[024] Surprisingly it has also been found that a polymer composition (PC1) comprising

a) a polymer (A1) having a glass transition temperature of less than 10°C,

b) a polymer (B1) having a glass transition temperature of at least 60°C, and

c) a polymer (C1) having a glass transition temperature of at least 30°C, said polymer (C1) represents at most 40wt% of a composition based on a), b) and c) only,

characterized in that at least the component a) and the component b) of composition (PC1) are part of a multistage polymer (MP1), and in that the polymer (C1) has a mass average molecular weight Mw between 10 000g/mol and 500 000g/mol,

polymerized comonomers (Mc_{b1}) and (Mc_{c1}) respectively both comonomers having a Hansen solubility parameter δ_p <10 $MPa^{1/2}$

[025a] In another aspect, the present disclosure refers to a process for manufacturing the polymer composition as defined above comprising the steps of

a) polymerizing by emulsion polymerization of a monomer or monomer mixture (A_m) to obtain one layer in a stage (A) comprising polymer (A1) having a glass transition temperature of less than 10°C,

b) polymerizing by emulsion polymerization of a monomer or monomer mixture (B_m) to obtain a layer in a stage (B) comprising a polymer (B1) having a glass transition temperature of at least 60°C,

c) polymerizing by emulsion polymerization of a monomer or monomer mixture (C_m) to obtain a layer in a stage (C) comprising a polymer (C1) having a glass transition temperature of at least 30°C said polymer (C1) represents at most 40wt% of the composition based on a), b) and c) only;

d) agglomerating the composition obtained in steps a) to c);

characterized in that the polymer (C1) has a mass average molecular weight Mw between 10 000g/mol and 500 000g/mol and in that either the monomer or monomer mixture (B_m) and the monomer or monomer mixture (C_m), both comprise monomers comprising an alicyclic hydrocarbon group with a carbon number from 3 to 20 or the monomer or monomer mixture (B_m) and the monomer or monomer mixture (C_m), both comprise comonomers (Mc_{b1}) and (Mc_{c1}) respectively both comonomers having a Hansen solubility parameter δ_p <10 $MPa^{1/2}$.

[025b] In another aspect, the present disclosure refers to a process for manufacturing the polymer composition as defined above comprising the steps of

a) polymerizing by emulsion polymerization of a monomer or monomer mixture (A_m) to obtain one layer in a stage (A) comprising polymer (A1) having a glass transition temperature of less than 10°C,

b) polymerizing by emulsion polymerization of a monomer or monomer mixture (B_m) to obtain layer in a stage (B) comprising a polymer (B1) having a glass transition temperature of at least 60°C,

both together steps a) and b) giving a multistage polymer (MP1) and a step

c) blending multistage polymer (MP1) with a polymer (C1) having a glass transition temperature of at least 30°C said polymer (C1) represents at most 40wt% of the composition based on a), b) and c) only;

d) agglomerating the composition obtained in steps a) to c);

characterized that the polymer (C1) has a mass average molecular weight Mw between 10 000g/mol and 500 000g/mol and in that either the monomer or monomer mixture (B_m) and the monomer or monomer mixture (C_m), both comprise monomers comprising an alicyclic hydrocarbon group with a carbon number from 3 to 20 or the monomer or monomer mixture (B_m) and the monomer or monomer mixture (C_m), both comprise comonomers (Mc_{b1}) and (Mc_{c1}) respectively both comonomers having a Hansen solubility parameter δ_p <10 $MPa^{1/2}$.

[025c] In another aspect, there is provided the use of a polymer composition (PC1) as defined above or obtained by the process as defined above as impact modifier.

[025d] In another aspect, the present disclosure refers to a liquid composition LC1 comprising

a) the polymer composition (PC1) as defined above or obtained by the process as defined above and

b) a monomer (M2)

characterized in that the polymer composition (PC1) to monomer (M2) ratio by weight in the liquid composition LC1 is between 1/99 and 25/75.

[025e] In another aspect, there is provided the use of the polymer composition (PC1) as defined above or obtained by the process as defined above in the field of composition for UV curing, 3D printing and adhesives.

[026] Surprisingly it has also been found that a process for manufacturing the polymer composition (PC1) in form of a polymer powder comprising the steps of

a) polymerizing by emulsion polymerization of a monomer or monomer mixture (A_m) to obtain one layer in stage (A) comprising polymer (A1) having a glass transition temperature of less than 10°C;

b) polymerizing by emulsion polymerization of a monomer or monomer mixture (B_m) to obtain layer in stage (B) comprising a polymer (B1) having a glass transition temperature of at least 60°C;

c) polymerizing by emulsion polymerization of a monomer or monomer mixture (Cm) to obtain a layer in a stage (C) comprising a polymer (C1) having a glass transition temperature of at least 30°C, so that said polymer (C1) represents at most 40wt% of the composition based on a), b) and c) only;

d) coagulating the composition obtained in steps a) to c);

characterized in that the polymer (C1) has a mass average molecular weight Mw between 10 000g/mol and 500 000g/mol and the monomer or monomer mixture (B_m) and the monomer or monomer mixture (C_m), both mixtures comprise comonomers (Mc_{b1}) and (Mc_{c1}) respectively said comonomers (Mc_{b1}) and (Mc_{c1}) comprising either an alicyclic hydrocarbon group with a carbon number from 3 to 20 or both comonomers having a Hansen solubility parameter δ_p <10 $MPa^{1/2}$; yields to a polymer composition that be easily dispersed in an low polar polymeric matrix material for thermosetting polymers or thermoplastic polymers or their respective precursors as liquid resins and/or monomers.

[027] Surprisingly it has also been found that a process for manufacturing the polymer composition (PC1) in form of a polymer powder comprising the steps of

a) polymerizing by emulsion polymerization of a monomer or monomer mixture (A_m) to obtain one layer in stage (A) comprising