[BACKGROUND OF THE INVENTION]Prior art

[018] The document US2004/0147668 discloses an acrylic polymer powder, an acrylic sol and molding. The acrylic polymer powder has an average size of 5μm to 10μm and void volume on the voids having a pore diameter of 1μm or more and is 0.9 ml/g or less.

[019] The document EP2196479 discloses a vinylidene fluoride polymer powder and the use thereof. The polymer powder is produced by supercritical suspension polymerization and the volume of the pores having a pore diameter of 0.03μm to 1.0μm as measured by a mercury porosimeter is 70vol% to 93vol% of total pore volume.

[020] The document WO2017/121749 discloses a liquid composition comprising a multistage polymer. In particular a liquid composition comprising a monomer, a (meth)acrylic polymer and a multistage polymer is disclosed.

[021] None of the prior art documents discloses a polymeric composition in form of powder having a porosity expressed in total intruded volume of at last 1.2ml/g as measured by mercury intrusion.

[Brief description]

[021a] In an aspect, there is provided a polymeric composition in form of a porous polymer powder POW1 having total intruded volume of at least 1.2 ml/g as measured by mercury porosimetry and characterized that the incremental intrusion between a pore size from 10μm to 1μm is at least 0.12ml/g and that the relative incremental intrusion between a pore size from 10μm to 1μm of at least 8%.

[021b] In another aspect, there is provided a process for manufacturing a liquid polymer composition LCP1 comprising the steps of

a) providing the polymeric composition in form of a porous polymer powder POW1 having total intruded volume of at least 1.2 ml/g as measured by mercury porosimetry as defined above and characterized that the incremental intrusion between a pore size from 10μm to 1μm is at least 0.12ml/g and that the

relative incremental intrusion between a pore size from 10µm to 1µm of at least 8%,

b) bringing into contact said polymeric composition in form of a porous polymer powder POW1 with a liquid composition LC1.

[021c] In another aspect, there is provided a process to reduce the dispersing time of a polymer powder in a liquid by providing a polymeric composition in form of a porous polymer powder POW1 having total intruded volume of at least 1.2 ml/g as measured by mercury porosimetry as defined above.

[021d] In another aspect, there is provided the use of the polymeric composition as defined above as a reduced dispersing time composition.

[022] Surprisingly it has been found that a polymeric composition in form of a porous polymeric powder POW1 can be easily and fast dispersed in other polymers, liquid resins and/or monomers, if the total intruded volume of the powder is at least 1.2 ml/g as measured by mercury porosimetry.

[023] Surprisingly it has also been found that a polymeric composition in form of a porous polymeric powder POW1 comprising polymeric particles can be easily and fast dispersed in other polymers and liquid resins, if the total intruded volume of the powder is at least 1.2 ml/g as measured by mercury porosimetry.

[024] Surprisingly it has additionally been found that a polymeric composition in form of a porous polymeric powder POW1 comprising polymeric particles can be easily and fast dispersed homogenously in other polymers and liquid resins for giving a satisfying impact resistance, if the total intruded volume of the powder is at least 1.2 ml/g as measured by mercury porosimetry.

Claims

1. A polymeric composition in form of a porous polymer powder POW1 having total intruded volume of at least 1.2 ml/g as measured by mercury porosimetry and characterized that the incremental intrusion between a pore size from 10µm to 1µm is at least 0.12ml/g and that the relative incremental intrusion between a pore size from 10µm to 1µm of at least 8%.

2. The polymeric composition according to claim 1, characterized in that the total intruded volume is at least 1.35 ml/g as measured by mercury porosimetry.

3. The polymeric composition according to claim 1 or 2, characterized in that the total intruded volume of at most 10ml/g as measured by mercury porosimetry.

4. The polymeric composition according to claim 1, characterized in that the total intruded volume is between 1.2ml/g and 10ml/g, more preferably between 1.25ml/g and 8 ml/g, even more preferably between 1.3 ml/g and 7 ml/g, advantageously between 1.35 ml/g and 6 ml/g, more advantageously between 1.35 ml/g and 5ml/g and most advantageously between 1.35 ml/g and 4ml/g.

5. The polymeric composition according to any of claims 1 to 4 characterized in that the relative incremental intrusion for a pore size above 10µm of at most 85%.

6. The polymeric composition according to claim 1 or 2 characterized in that the incremental intrusion between a pore size from 10µm to 1µm of at least 0.15ml/g.

7. The polymeric composition according to claim 1 or 2 characterized in that the relative incremental intrusion between a pore size from 10µm to 1µm of at least 10%.

8. The polymeric composition according to any of claims 1 to 7, characterized in that the porous polymer powder POW1 has a volume median particle size D50 between 1µm and 700µm.

9. The polymeric composition according to any of claims 1 to 7, characterized in that the apparent bulk density of the polymer powder POW1 is between 0.1g/cm^3 and 0.60g/cm^3.

10. The polymeric composition according to any of claims 1 to 7, characterized in that the polymer powder POW1 comprises polymeric particles PAR1 that make up at least 50wt% of the polymer powder composition POW1.

11. The polymeric composition according to claim 10, characterized in that the polymeric particles PAR1 has a weight average particle size (diameter) between 15nm and 900nm.

12. The polymeric composition according to any of claims 10 to 11, characterized in that the polymeric particle PAR1 is a multistage polymer MSP1 is in form of core-shell particles.

13. The polymeric composition according to any of claims 10 to 11, characterized in that the polymer powder POW1 comprises a multistage polymer MSP1 in form of a core-shell particle and a (meth)acrylic polymer MP1 in form of a polymeric particles.

14. The polymeric composition according to any of claims 10 to 11, characterized in that the the polymer powder POW1 comprises a polymer P1.

15. The polymeric composition according to claim 12 or 13 characterized in that the multistage polymer MSP1 has a multilayer structure comprising at least one stage (SA1) comprising a polymer (A1) having a glass transition temperature below 10°C, at least one stage (SA2) comprising a polymer (A2) having a glass transition temperature over 60°C.

16. The polymeric composition according to any of claims 1 to 9, characterized in that the the polymer powder POW1 comprises a multistage polymer MSP1 and a (meth)acrylic polymer MP1.

17. A process for manufacturing a liquid polymer composition LCP1 comprising the steps of

a) providing the polymeric composition in form of a porous polymer powder POW1 having total intruded volume of at least 1.2 ml/g as measured by mercury porosimetry according to any of claims 1 to 11 and characterized that the incremental intrusion between a pore size from 10µm to 1µm is at least 0.12ml/g and that the relative incremental intrusion between a pore size from 10µm to 1µm of at least 8%,

b) bringing into contact said polymeric composition in form of a porous polymer powder POW1 with a liquid composition LC1.

18. The process according to claim 17, characterized in that the viscosity of the liquid composition LC1 is between 0.5mPas 1000Pa*s at a temperature of 25°C.

19. The process according to claim 12 or 13, characterized in that the liquid composition LC1 can be chosen from compositions for preparing vinyl ester, unsaturated polyester or epoxy resin; or it can be for example a styrenic monomer or an (meth)arylic monomer, or a mixture there of or a liquid composition comprising said monomers.

20. The process according to any of claims 17 to 19, characterized that the pourous polymer powder POW1 represents between 0.5 and 50wt% of the liquid polymer composition LCP1.

21. Use of the polymeric composition according to any of claims 1 to 11 or of the composition obtained by the process according to any of claims 17 to 20 as impact modifier or impact modified composition.

22. A process to reduce the dispersing time of a polymer powder in a liquid by providing a polymeric composition in form of a porous polymer powder POW1 having total intruded volume of at least 1.2 ml/g as measured by mercury porosimetry according to any of claims 1 to 16.

23. The process according to claim 22, comprising the steps of

- providing a precursor for a thermosetting polymer or a monomer of a thermoplastic polymer
- bringing into contact the polymeric composition in form of a porous polymer powder POW1 and said precursor.

24. The process according to claims 23, characterized in that the precursor is liquid, preferably having a viscosity of the liquid composition LC1 is between 0.5mPas 1000Pa*s at a temperature of 25°C.

25. The process according to claims 23, characterized in that the between 0.5 parts by weight and 100parts by weight of porous polymer powder POW1 are brought into contact for 100 parts by weight of said precursor.

26. Use of the polymeric composition according to any of claims 1 to 16 as a reduced dispersing time composition.