[022] The document EP 1 666 519 discloses a process for producing rubbery polymer particles and process for resin composition containing the same.

[023] The document EP 2 123 711 discloses a thermosetting resin composition having a rubbery polymer particle dispersed therein and process for production thereof.

[024] None of the prior art documents discloses a composition as claimed or a process for obtaining it.

[Brief description]

[025] Surprisingly it has been found that a polymer composition comprising

a) a (meth)acrylic polymer (P1), and

b) a multi stage polymer,

wherein the multi stage polymer makes up at least 20wt% of the composition can easily dispersed in epoxy, polyester or (meth)acrylics resin.

[025a] In an aspect, there is provided a polymer composition comprising

a (meth) acrylic polymer (P1),

a multi stage polymer,

wherein the multistage polymer makes up at least 20wt% of the polymer composition.

[026] Surprisingly it has also been found that a polymer composition comprising

a) a (meth)acrylic polymer (P1), and

b) a multi stage polymer,

wherein the multi stage polymer makes up at least 20wt% of the composition can be used as masterbatch for epoxy, polyester or (meth)acrylics resin.

[027] Surprisingly it has also been found that a process for manufacturing a polymer composition comprising the steps of

a) mixing of a (meth) acrylic polymer (P1) and a multi stage polymer

b) recovering the obtained mixture of previous step

wherein the (meth) acrylic polymer (P1) and the multi stage polymer in step a) are in form of a dispersion in aqueous phase yields to a polymer composition that can be used as masterbatch for epoxy, polyester or (meth) acrylics resin.

[027a] In another aspect, there is provided a process for manufacturing a polymer composition comprising the steps of

a) mixing of the (meth) acrylic polymer (P1) and the multi stage polymer

b) recovering the obtained mixture of previous step in form of a polymer powder

wherein the (meth) acrylic polymer (P1) and the multi stage polymer in step a) are in form of a dispersion in aqueous phase.

[027b] In another aspect, there is provided the use of the polymer composition as defined above or obtained by the process as defined above as masterbatch in thermosetting resins or thermoplastic polymer.

[027c] In another aspect, there is provided the use of the polymer composition as defined above or obtained by the process as defined above as masterbatch in thermosetting resins, wherein the resin is chosen from epoxy, polyester or (meth) acrylics resin.

[027d] In another aspect, there is provided an impact modified polymer composition comprising

a) a polymer (P2) and

b) a (meth) acrylic polymer (P1), and

c) a polymer obtained by a multistage process with

-one stage (A) comprising a polymer (A1) having a glass transition temperature of less than 0°C

-one stage (B) comprising a polymer (B1) having a glass transition temperature of at least 30°C,

characterized that the multistage polymer makes up at least 5wt% of the composition.

[027e] In another aspect, there is provided a process for manufacturing an impact modified polymer composition comprising the step of

a) mixing epoxy rein E1 with a masterbatch characterized that said master batch comprises a polymer composition as defined above or obtained by the process as defined above.

Claims

1. A polymer composition comprising

a (meth) acrylic polymer (P1),

a multi stage polymer,

wherein the multistage polymer makes up at least 20wt% of the polymer composition.

2. The polymer composition according to claim 1, characterized that the (meth) acrylic polymer (P1) has a mass average molecular weight Mw of less than 100 000g/mol.

3. The polymer composition according to claim 1 or 2, characterized that the multi stage polymer comprises

a) one stage (A) comprising a polymer (A1) having a glass transition temperature of less than 10°C

b), one stage (B) comprising a polymer (B1) having a glass transition temperature of at least 30°C.

4. The polymer composition according to claim 3, characterized that the stage (A) is the first stage and that stage (B) comprising polymer (B1) is grafted on stage (A) comprising polymer (A1).

5. The polymer composition according to any of claims 3 to 4, characterized that the polymers (A1) and (B1) are acrylic or methacrylic polymers.

6. The polymer composition according to any of claims 3 to 4 characterized that the polymer (A1) comprises at least 50wt% of polymeric units coming from isoprene or butadiene.

7. The polymer composition according to any of claims 3 to 4, characterized that the polymer (A1) is a silicone rubber based polymer.

8. The polymer composition according to any of claims 1 to 7, characterized that the (meth) acrylic polymer (P1) comprises (meth)acrylic monomers that make up 50wt% or more of the (meth)acrylic polymer (P1), more preferably the (meth)acrylic polymer (P1) comprises at least 60wt% of (meth)acrylic monomers and advantageously at least 70wt%.

9. The polymer composition according to any of claims 1 to 8, characterized that the (meth) acrylic polymer (P1) comprises also a functional comonomer.

10. A process for manufacturing a polymer composition comprising the steps of

a) mixing of the (meth) acrylic polymer (P1) and the multi stage polymer

b) recovering the obtained mixture of previous step in form of a polymer powder

wherein the (meth) acrylic polymer (P1) and the multi stage polymer in step a) are in form of a dispersion in aqueous phase.

11. The process according to claim 10, characterized that the (meth) acrylic polymer (P1) has a mass average molecular weight Mw of less than 100 000g/mol.

12. The process according to any of claims 10 to 11, characterized that the multistage polymer makes up at least 20wt% of the dry polymer composition.

13. Use of the polymer composition according to any of claims 1 to 9 or obtained by the process according to any of claims 10 to 11 as masterbatch in thermosetting resins or thermoplastic polymer.

14. Use of the polymer composition to any of claims 1 to 9 or obtained by the process according to any of claims 10 to 11 as masterbatch in thermosetting resins, wherein the resin is chosen from epoxy, polyester or (meth)acrylics resin.

15. Use according to claim 14 characterized that the thermosetting resin is an epoxy resin.

16. An impact modified polymer composition comprising

a) a polymer (P2)and

b) a (meth)acrylic polymer (P1), and

c)a polymer obtained by a multistage process with

-one stage (A) comprising a polymer (A1) having a glass transition temperature of less than 0°C

-one stage (B) comprising a polymer (B1) having a glass transition temperature of at least 30°C,

characterized that the multistage polymer makes up at least 5wt% of the composition.

17. The impact modified polymer composition according to claim 16 characterized that the (meth) acrylic polymer (P1) has a mass average molecular weight Mw of less than 100 000g/mol.

18. The impact modified polymer composition according to claim 16 or 17, characterized that the polymer (P2) is thermosetting resin R1 that is preferably chosen from epoxy, polyester or (meth)acrylics resin .

19. The impact modified polymer composition according to claim 16 or 17, characterized that the polymer (P2) is thermosetting resin R1 that is an epoxy resin E1 having a Tg of 25°C or less and that (meth)acrylic polymer (P1) comprising from 80wt% to 100wt% methyl methacrylate.

20. The impact modified polymer composition according to claim 16 or 17 characterized that the polymer (P2) is thermosetting resin R1 that is an epoxy resin E1 and the (meth)acrylic polymer (P1) comprises functional comonomer.

21. The impact modified polymer composition according to claim 16 or 17 characterized that the polymer (P2) is a methacrylic resin and that (meth)acrylic polymer (P1) comprising from 80wt% to 100wt% methyl methacrylate.

22. Process for manufacturing an impact modified polymer composition comprising the step of

a) mixing epoxy rein E1 with a masterbatch

characterized that said master batch comprises a polymer composition according to any of claims 1 to 9 or obtained by the process according to any of claims 10 to 12.