Claims

1. A process for the preparation of an aqueous slurry comprising a plurality of elastomer particles suspended therein, the process comprising at least the steps of:

A) contacting an organic medium comprising

i) at least one elastomer and

ii) an organic diluent

with an aqueous medium comprising at least one LCST compound having a cloud point of 0 to 100℃ and

B) removing at least partially the organic diluent to obtain the aqueous slurry comprising the elastomer particles,

wherein the organic medium is obtained from a polymerization reaction and further contains residual monomers of the polymerization reaction.

2. The process according to claim 1, wherein LCST compounds are those having a cloud point of 0 to 100℃ determined by at least one of the following methods:

- DIN EN 1890 of September 2006, method A
- DIN EN 1890 of September 2006, method C
- DIN EN 1890 of September 2006, method E
- DIN EN 1890 of September 2006, method A wherein the amount of compound tested is reduced from 1g per 100 ml of distilled water to 0.05 g per 100 ml of distilled water
- DIN EN 1890 of September 2006, method A wherein the amount of compound tested is reduced from 1g per 100 ml of distilled water to 0.2 g per 100 ml of distilled water.

3. The process according to claim 1 or 2, wherein the elastomers include butyl rubbers and halogenated butyl rubbers, polyisobutylene, ethylene propylene diene M-class rubbers (EPDM), nitrile butadiene rubbers (NBR), hydrogenated nitrile butadiene rubbers (HNBR) and styrene-butadiene rubbers (SBR).

4. The process according to one of claims 1 to 3, wherein the aqueous medium further contains non-LCST compounds whereby the non-LCST compounds are

- selected from the group consisting of ionic or non-ionic surfactants, emulsifiers, and antiagglomerants.

5. The process according to one of claims 1 to 4, wherein the aqueous medium comprises 20,000 ppm or less of non-LCST compounds whereby the non-LCST compounds are selected from the groups listed in claim 4.

6. The process according to one of claims 1 to 5, wherein elastomer particles are discrete particles having a particle size of between 0.05 mm and 25 mm.

7. The process according to one of claims 1 to 6, wherein the aqueous phase comprises of from 1 to 2,000 ppm of antioxidants calculated with respect to the amount of elastomer present in the organic medium.

8. The process according to one of claims 1 to 7, wherein the weight average molecular weight of the elastomer is in the range of from 10 to 2,000 kg/mol.

9. The process according to one of claims 1 to 8, wherein the elastomer has a polydispersity of the elastomers according to the invention is in the range of 1.5 to 4.5 as measured by the ratio of weight average molecular weight to number average molecular weight as determined by gel permeation chromatography.

10. The process according to one of claims 1 to 9, wherein the elastomer has a Mooney viscosity of at least 10 (ML 1 + 8 at 125℃, ASTM D 1646).

11. The process according to one of claims 1 to 9, wherein the organic medium is obtained by a process comprising at least the steps of:

a) providing a reaction medium comprising an organic diluent, and at least one polymerizable monomer

b) polymerizing the monomers within the reaction medium in the presence of an initiator system or catalyst to form an organic medium comprising the elastomer, the organic diluent and residual monomers.

12. The process according to one of claims 1 to 11, wherein the organic medium is obtained by a process comprising at least the steps of:

a) providing a reaction medium comprising an organic diluent, and at least two monomers whereby at least one monomer is an isoolefin and at least one monomer is a multiolefin;

b) polymerizing the monomers within the reaction medium in the presence of an initiator system to form an organic medium comprising the elastomer , the organic diluent and residual monomers.

13. The process according to one of claim 12, wherein the at least one isoolefin is selected from the the group consisting of isoolefin monomers having from 4 to 16 carbon atoms.

14. The process according to one of claims 12 and 13, wherein the isoolefin is isobutene.

15. The process according to one of claims 12 to 14, wherein the at least one multiolefin is selected from the the group consisting of isoprene, butadiene, 2-methylbutadiene, 2,4-dimethylbutadiene, piperyline, 3-methyl-1,3-pentadiene, 2,4-hexadiene, 2-neopentylbutadiene, 2-methyl-1,5-hexadiene, 2,5-dimethyl-2,4-hexadiene, 2-methyl-1,4-pentadiene, 4-butyl-1,3-pentadiene, 2,3-dimethyl-1,3-pentadiene, 2,3-dibutyl-1,3-pentadiene, 2-ethyl-1,3-pentadiene, 2-ethyl-1,3-butadiene, 2-methyl-1,6-heptadiene, cyclopentadiene, methylcyclopentadiene, cyclohexadiene and 1-vinyl-cyclohexadiene.

16. The process according to one of claims 12 to 15, wherein the multiolefin is isoprene.

17. The process according to one of claims 12 to 16, wherein the monomers are isobutylene and isoprene.

18. The process according to one of claims 12 to 17, wherein at least one further monomers is selected from the group consisting of β-pinene, styrene, divinylbenzene, diisopropenylbenzene o-, m- and p-alkylstyrenes such as o-, m- and p-methyl-styrene.

19. The process according to one of claims 12 to 18, wherein the monomers employed in step a) comprise in the range of from 80 wt.-% to 99.5 wt.-% by weight of at least one isoolefin monomer and in the range of from 0.5 wt.-% to 20 wt.-% by weight of at least one multiolefin monomer based on the weight sum of all monomers employed.

20. The process according to one of claims 12 to 19, wherein the monomers are present in the reaction medium in an amount of from 0.01 wt.-% to 80 wt.-%.

21. The process according to one of claims 1 to 20, wherein the organic diluents are hydrochlorocarbon(s) or hydrofluorocarbons represented by the formula: $C_xH_yF_z$ wherein x is an integer from 1 to 40, wherein y and z are integers and at least one or hydrocarbons or mixtures of the aforementioned diluents.

22. The process according to one of claims 12 to 21, wherein the polymerization according to step b) is carried out either as slurry polymerization or solution polymerization.

23. The process according to one of claims 12 to 22, wherein step b) is carried out batchwise or continuously.

24. The process according to one of claims 12 to 23, wherein the initiator comprises aluminium trichloride.

25. The process according to one of claims 1 to 24, wherein the at least one LCST compound is selected from the group consisting of:
methyl cellulose, hydroxypropyl cellulose, hydroxyethyl methylcellulose and hydroxypropyl methylcellulose.

26. The process according to one of claims 1 to 25, wherein the amount of LCST compound(s) present in the aquous medium employed in step A) is of from 1 to 20,000 ppm with respect to the amount of elastomer present in the organic medium.

27. The process according to one of claims 1 to 26, comprising a further step C) wherein the elastomer particles contained in the aqueous slurry obtained according to step B) are separated to obtain isolated elastomer particles.

28. The process according to one of claims 1 to 26, comprising further step C) wherein the elastomer particles contained in the aqueous slurry obtained according to step B) are separated to obtain isolated elastomer particles and further step e) wherein the isolated elastomer particles are dried.