Claims~~:~~

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

~~A) contacting an organic medium comprising~~

~~i) polyisobutylene and~~

~~ii) an organic diluent~~

~~with an aqueous medium comprising at least one LCST compound having a cloud point of 0 to 100°C, preferably 5 to 100°C, more preferably 15 to 80°C and even more preferably 20 to 70°C and~~

~~B) removing at least partially the organic diluent to obtain the aqueous slurry comprising the polyisobutylene particles.~~

~~2. The process according to claim 1, wherein LCST compounds are those having a cloud point of 0 to 100°C, preferably 5 to 100°C, more preferably 15 to 80°C and even more preferably 20 to 80°C 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.~~

1. A composition comprising 98.5 wt.-% or more of polyisobutylene and having an ash content measured according to ASTM D5667 of 0.2 wt.-% or less.
2. The composition according to claim 1, further comprising 1 ppm to 5,000 ppm of at least one lower critical solution temperature compound.

3. The ~~process~~composition according to claim ~~1~~2, wherein ~~LCST compounds are those having a cloud point of 0 to 100°C, preferably 5 to 100°C, more preferably 15 to 80°C and even more preferably 20 to 80°C determined by~~ said at ~~least~~ one ~~of the following methods:~~

- ~~DIN EN 1890 of September 2006, method A~~
- ~~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.

4. The process according to claim 1, wherein LCST compounds are those having a cloud point of 0 to 100°C, preferably 5 to 100°C, more preferably 15 to 80°C and even more preferably 20 to 80°C 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 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.

5. The process according to one of claims 1 to 4, wherein the organic medium comprising polyisobutylene and an organic diluent is obtained from a polymerization reaction.

6. The process according to one of claims 1 to 5, wherein the organic medium is obtained from a polymerization reaction and further contains residual polyisobutylene of the polymerization reaction.

7. The process according to one of claims 1 to 6, 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 or are in another embodiment
   - salts of mono- or multivalent metal ions or are in another embodiment
   - stearates or palmitates of mono- or multivalent metal ions or are in another embodiment
   - sodium, potassium, calcium and zinc stearates or palmitates

   and preferably calculated with respect to the amount of polyisobutylene present in the organic medium.

8. The process according to one of claims 1 to 7, wherein the aqueous medium comprises 20.000 ppm or less, preferably 10.000 ppm or less, more preferably 8.000 ppm or less, even more preferably 5.000 ppm or less and yet even more

preferably 2.000 ppm or less and in another yet even more preferred embodiment 1.000 ppm or less of non-LCST compounds, whereby the non-LCST compounds are

- selected from the group consisting of ionic or non-ionic surfactants, emulsifiers, and antiagglomerants or are in another embodiment
- salts of mono- or multivalent metal ions or are in another embodiment
- stearates or palmitates of mono- or multivalent metal ions or are in another embodiment
- sodium, potassium, calcium and zinc stearates or palmitates

and preferably calculated with respect to the amount of polyisobutylene present in the organic medium.

9. The process according to one of claims 1 to 8, wherein the aqueous medium comprises 500 ppm or less, preferably 100 ppm or less, more preferably 50 ppm or less, even more preferably 30 ppm or less and yet even more preferably 10 ppm or less and in another yet even more preferred embodiment 1.000 ppm or less of non-LCST compounds, whereby the non-LCST compounds are

- selected from the group consisting of ionic or non-ionic surfactants, emulsifiers, and antiagglomerants or are in another embodiment
- salts of mono- or multivalent metal ions or are in another embodiment
- stearates or palmitates of mono- or multivalent metal ions or are in another embodiment
- sodium, potassium, calcium and zinc stearates or palmitates

and preferably calculated with respect to the amount of polyisobutylene present in the organic medium.

10. The process according to one of claims 1 to 9, wherein the aqueous medium comprises of from 0 to 5,000 ppm, preferably of from 0 to 2,000 ppm, more preferably of from 10 to 1,000 ppm, even more preferably of from 50 to 800 ppm and yet even more preferably of from 100 to 600 ppm of salts of mono or

multivalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium.

lower critical11. The process according to one of claims 1 to 10, wherein the aqueous medium comprises of from 0 to 5,000 ppm, preferably of from 0 to 2,000 ppm, more preferably of from 10 to 1,000 ppm, even more preferably of from 50 to 800 ppm and yet even more preferably of from 100 to 600 ppm of salts of multivalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium.

12. The process according to one of claims 1 to 11, wherein the weight ratio of salts of stearates, palmitates and oleates of mono- and multivalent metal ions to the LCST compounds is of from 1:2 to 1:100, preferably 1:2 to 1:10 and more preferably of from 1:5 to 1:10 in the aqueous medium.

13. The process according to one of claims 1 to 12, wherein the aqueous medium comprises 550 ppm or less, preferably 400 ppm or less, more preferably 300 ppm or less, even more preferably 250 ppm or less and yet even more preferably 150 ppm or less and in another yet even more preferred embodiment 100 ppm or less of salts of metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium.

14. The process according to one of claims 1 to 13, wherein the aqueous medium comprises 550 ppm or less, preferably 400 ppm or less, more preferably 300 ppm or less, even more preferably 250 ppm or less and yet even more preferably 150 ppm or less and in another yet even more preferred embodiment 100 ppm or less of salts of multivalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium.

15. The process according to one of claims 1 to 14, wherein the aqueous medium comprises 8.000 ppm or less, preferably 5.000 ppm or less, more preferably 2.000 ppm or less, yet even more preferably 1.000 ppm or less, in another embodiment preferably 500 ppm or less, more preferably 100 ppm or less and even more preferably 15 ppm or less and yet even more preferably no or from 1 ppm to 10 ppm of non-ionic surfactants being non-LCST compounds selected from the group consisting of ionic or non-ionic surfactants, emulsifiers, and antiagglomerants and with respect to the amount of polyisobutylene present in the organic medium.

16. The process according to one of claims 1 to 15, wherein the aqueous medium comprises 70 ppm or less, preferably 50 ppm or less, more preferably 30 ppm or less and even more preferably 20 ppm or less and yet even more preferably 10 ppm or less of salts of multivalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium.

17. The process according to one of claims 1 to 16, wherein the aqueous medium comprises 25 ppm or less, preferably 10 ppm or less, more preferably 8 ppm or less and even more preferably 7 ppm or less and yet even more preferably 5 ppm or less of salts of multivalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium.

18. The process according to one of claims 1 to 17, wherein the aqueous medium comprises 550 ppm or less, preferably 400 ppm or less, more preferably 300 ppm or less, even more preferably 250 ppm or less and yet even more preferably 150 ppm or less and in another yet even more preferred embodiment 100 ppm or less of carboxylic acid salts of multivalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium, whereby the carboxylic acids are selected from those having 6 to 30 carbon atoms, preferably 8 to 24 carbon atoms, more preferably 12 to 18 carbon atoms.

19. The process according to one of claims 1 to 18, wherein the aqueous medium comprises 70 ppm or less, preferably 50 ppm or less, more preferably 30 ppm or less and even more preferably 20 ppm or less and yet even more preferably 10 ppm or less of carboxylic acid salts of multivalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium, whereby the carboxylic acids are selected from those having 6 to 30 carbon atoms, preferably 8 to 24 carbon atoms, more preferably 12 to 18 carbon atoms.

20. The process according to one of claims 1 to 19, wherein the aqueous medium comprises 25 ppm or less, preferably 10 ppm or less, more preferably 8 ppm or less and even more preferably 7 ppm or less and yet even more preferably 5 ppm or less of carboxylic acid salts of multivalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium, whereby the carboxylic acids are selected from those having 6

to 30 carbon atoms, preferably 8 to 24 carbon atoms, more preferably 12 to 18 carbon atoms.

21. The process according to one of claims 1 to 20, wherein the aqueous medium one embodiment the aqueous medium is free of carboxylic acid salts of multivalent metal ions whereby the carboxylic acids are selected from those having 6 to 30 carbon atoms, preferably 8 to 24 carbon atoms, more preferably 12 to 18 carbon atoms.

22. The process according to one of claims 1 to 21, wherein the aqueous medium comprises 100 ppm or less, preferably 50 ppm or less, more preferably 20 ppm or less and even more preferably 15 ppm or less and yet even more preferably 10 ppm or less of salts of monovalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium.

23. The process according to one of claims 1 to 22, wherein the aqueous medium comprises additionally or alternatively 100 ppm or less, preferably 50 ppm or less, more preferably 30 ppm or less, even more preferably 20 ppm or less and yet even more preferably 10 ppm or less and in another yet even more preferred embodiment 5 ppm or less of carboxylic acid salts of monovalent metal ions such as sodium stearate, sodium palmitate and sodium oleate and potassium stearate, potassium palmitate and potassium oleate calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium, whereby the carboxylic acids are selected from those having 6 to 30 carbon atoms, preferably 8 to 24 carbon atoms, more preferably 12 to 18 carbon atoms. In one embodiment such carboxylic acids are selected from monocarboxylic acids.

24. The process according to one of claims 1 to 23, wherein the aqueous medium is free of carboxylic acid salts of monovalent metal ions whereby the carboxylic acids are selected from those having 6 to 30 carbon atoms, preferably 8 to 24 carbon atoms, more preferably 12 to 18 carbon atoms.

25. The process according to one of claims 18 to 24, wherein the carboxylic acids are selected from monocarboxylic acids, preferably saturated monocarboxylic acids, more preferably palmitic or stearic acid.

26. The process according to one of claims 1 to 25, wherein the aqueous medium comprises of from 0 to 5,000 ppm, preferably of from 0 to 2,000 ppm, more

preferably of from 10 to 1,000 ppm, even more preferably of from 50 to 800 ppm and yet even more preferably of from 100 to 600 ppm of

- carbonates of multivalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium or in another embodiment of
- magnesium carbonate and calcium carbonate calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium.

27. The process according to one of claims 1 to 26, wherein the aqueous medium comprises 550 ppm or less, preferably 400 ppm or less, more preferably 300 ppm or less, even more preferably 250 ppm or less and yet even more preferably 150 ppm or less and in another yet even more preferred embodiment 100 ppm or less of

- carbonates of multivalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium or in another embodiment of
- magnesium carbonate and calcium carbonate calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium

28. The process according to one of claims 1 to 27, wherein the aqueous medium comprises 70 ppm or less, preferably 50 ppm or less, more preferably 30 ppm or less and even more preferably 20 ppm or less and yet even more preferably 10 ppm or less of

- carbonates of multivalent metal ions calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium or in another embodiment of
- magnesium carbonate and calcium carbonate calculated on their metal content and with respect to the amount of polyisobutylene present in the organic medium.

29. The process according to one of claims 1 to 28, wherein the aqueous medium comprises 500 ppm or less, preferably 200 ppm or less, more preferably 100 ppm or less, even more preferably 50 ppm or less and yet even more preferably 20 ppm or less and in another yet even more preferred embodiment

no layered minerals such as talcum calculated with respect to the amount of polyisobutylene present in the organic medium.

30. The process according to one of claims 1 to 29, wherein the aqueous medium comprises 500 ppm or less, preferably 200 ppm or less, more preferably 100 ppm or less, even more preferably 20 ppm or less and yet even more preferably 10 ppm or less and in another yet even more preferred embodiment 5 ppm or less and yet even more preferably no dispersants, emulsifiers or anti-agglomerants other than LCST compounds.

31. The process according to one of claims 1 to 30, wherein polyisobutylene particles are discrete particles of any form and consistency, which in a preferred embodiment have a particle size of between 0.05 mm and 25 mm, more preferably between 0.1 and 20 mm.

32. The process according to one of claims 1 to 31, wherein polyisobutylene particles have a weight average particle size of from 0.3 to 10.0 mm.

33. The process according to one of claims 1 to 32, wherein the aqueous medium comprises of from 1 to 2,000 ppm of antioxidants and/or stabilizers, preferably of from 50 to 1,000 ppm more preferably of from 80 to 500 ppm calculated with respect to the amount of polyisobutylene present in the organic medium, whereby preferred antioxidants and stabilizers are 2,6-di-tert.-butyl-4-methyl-phenol, pentaerythrol-tetrakis-[3-(3,5-di-tert.-butyl-4-hydroxyphenyl)-propanoic acid, octadecyl 3,5-di(tert)-butyl-4-hydroxyhydrocinnamate, tert-butyl-4-hydroxy anisole, 2-(1,1-dimethyl)-1,4-benzenediol, tris(2,4,-di-tert-butylphenyl)phosphate, dioctyldiphenylamine, butylated products of p-cresol and dicyclopentadiene or 2,4,6-tri-tert-butylphenol, 2,4,6 tri-isobutylphenol, 2-tert-butyl-4,6-dimethylphenol, 2,4-dibutyl-6-ethylphenol, 2,4-dimethyl-6-tert-butylphenol, 2,6-di-tert-butylhydroxytoluol (BHT), 2,6-di-tert-butyl-4-ethylphenol, 2,6-di-tert-butyl-4-n-butylphenol, 2,6-di-tert-butyl-4-iso-butylphenol, 2,6-dicyclopentyl-4-methylphenol, 4-tert-butyl-2,6-dimethylphenol, 4-tert-butyl-2,6-dicyclopentylphenol, 4-tert-butyl-2,6-diisopropylphenol, 4,6-di-tert-butyl-2-methylphenol, 6-tert-butyl-2,4-dimethylphenol, 2,6-di-tert-butyl-3-methylphenol, 4-hydroxymethyl-2,6-di-tert-butylphenol, 2,6-di-tert-butyl-4-phenylphenol und 2,6-dioctadecyl-4-methylphenol, 2,2‘-ethylidene-bis[4,6-di-tert.-butylphenol], 2,2‘-ethylidene-bis[6-tert.-butyl-4-isobutylphenol], 2,2‘-isobutylidene-bis[4,6-dimethyl-phenol], 2,2‘-methylene-bis[4,6-di-tert.-butylphenol], 2,2‘-methylene-bis[4-methyl-6-(α-methylcyclohexyl)phenol], 2,2‘-

methylene-bis[4-methyl-6-cyclohexylphenol], 2,2‘-methylene-bis[4-methyl-6-nonylphenol], 2,2‘-methylene-bis[6-(α,α‘-dimethylbenzyl)-4-nonylphenol], 2,2‘-methylene-bis[6-(α-methylbenzyl)-4-nonylphenol], 2,2‘-methylene-bis[6-cyclohexyl-4-methylphenol], 2,2‘-methylene -bis[6-tert.-butyl-4-ethylphenol], 2,2‘-methylene -bis[6-tert.-butyl-4-methylphenol], 4,4‘-butylidene-bis[2-tert.-butyl-5-methylphenol], 4,4‘-methylene -bis[2,6-di-tert.-butylphenol], 4,4‘-methylene -bis[6-tert.-butyl-2-methylphenol], 4,4‘-isopropylidene-diphenol, 4,4'-decylidene-bisphenol, 4,4'-dodecylidene-bisphenol, 4,4’-(1-methyloctylidene)bisphenol, 4,4‘-cyclohexylidene-bis(2-methylphenol), 4,4‘-cyclohexylidenebisphenol, and pentaerythrol-tetrakis-[3-(3,5-di-tert.-butyl-4-hydroxyphenyl)-propanoic acid.

34. The process according to one of claims 1 to 30, wherein the viscosity averaged molecular weight (M_v) of the polyisobutylene is in the range of from 100 to 3,000 kg/mol, preferably in the range of from 250 to 3,000 kg/mol or, in another embodiment in the range of from 100 to 2,000 kg/mol, preferably in the range of from 200 to 2,000 kg/mol, more preferably in the range of from 350 to 1,800 kg/mol, even more preferably in the range of from 400 to 1500 kg/mol and yet even more preferably of from 700 to 1300 kg/mol or in another embodiment the viscosity averaged molecular weight (M_v) of the polyisobutylene is in the range of from 2,001 to 3,000 kg/mol or in yet another embodiment the viscosity averaged molecular weight (M_v) of the polyisobutylene is in the range of from 3,001 to 10,000 kg/mol.

35. The process according to one of claims 1 to 34, wherein the polyisobutylene has a polydispersity of the polyisobutylenes according to the invention is in the range of 3.0 to 5.5 as measured by the ratio of weight average molecular weight to number average molecular weight as determined by gel permeation chromatography.

36. The process according to one of claims 1 to 35, wherein the polyisobutylene has a Mooney viscosity of at least 10 (ML 1 + 8 at 125°C, ASTM D 1646), preferably of from 10 to 80, more preferably of from 20 to 80 and even more preferably of from 25 to 60 (ML 1 + 8 at 125°C, ASTM D 1646).

37. The process according to one of claims 1 to 36, 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 isobutylene

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

38. The process according to claim 37, wherein the isobutylene is present in the reaction medium in an amount of from 0.01 wt.-% to 80 wt.-%, preferably of from 0.1 wt.-% to 65 wt.-%, more preferably of from 10.0 wt.-% to 65.0 wt.-% and even more preferably of from 25.0 wt.-% to 65.0 wt.-%.

39. The process according to one of claims 37 to 38, 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, alternatively from 1 to 30, alternatively from 1 to 20, alternatively from 1 to 10, alternatively from 1 to 6, alternatively from 2 to 20 alternatively from 3 to 10, alternatively from 3 to 6, most preferably from 1 to 3, wherein y and z are integers and at least one or hydrocarbons, preferably alkanes which in a further preferred embodiment are those selected from the group consisting of propane, isobutane, pentane, methycyclopentane, isohexane, 2-methylpentane, 3-methylpentane, 2-methylbutane, 2,2-dimethylbutane, 2,3-dimethylbutane, 2-methylhexane, 3-methylhexane, 3-ethylpentane, 2,2-dimethylpentane, 2,3-dimethylpentane, 2,4-dimethylpentane, 3,3-dimethyl pentane, 2-methylheptane, 3-ethylhexane, 2,5-dimethylhexane, 2,2,4,-trimethylpentane, octane, heptane, butane, ethane, methane, nonane, decane, dodecane, undecane, hexane, methyl cyclohexane, cyclopropane, cyclobutane, cyclopentane, methylcyclopentane, 1,1-dimethylcycopentane, cis-1,2-dimethylcyclopentane, trans-1,2-dimethylcyclopentane, trans-1,3-dimethyl-cyclopentane, ethylcyclopentane, cyclohexane, methylcyclohexane mixtures of the aforementioned diluents.

40. The process according to one of claims 37 to 38, wherein the polymerization according to step b) is carried out either as slurry polymerization or solution polymerization.

41. The process according to one of claims 37 to 40, wherein step b) is carried out batchwise or continuously, preferably continuously.

42. The process according to one of claims 37 to 41, wherein in step b) at least one control agent for the initiator system is employed.

43. The process according to claim 42, wherein the at least one control agent comprises ethylene, mono- or di-substituted C_3-C_{20} monoalkenes, preferably monosubstituted C_3-C_{20} monoalkenes, more preferably (C_3-C_{20})-1-alkenes, such as 1-butene, preferably applied in an amount of from 0.01 to 20 wt.-% calculated on the monomers employed in step a), preferably in an amount of from 0.2 to 15 wt.-% and more preferably in an amount of from 1 to 15 wt.-%.

44. The process according to claim 42 or 43, wherein the at least one control agent comprises diisobutylene, preferably in an amount of from 0.001 to 3 wt.-% calculated on the monomers employed in step a), preferably in an amount of from 0.01 to 2 wt.-% and more preferably in an amount of from 0.01 to 1.5 wt.-%.

45. The process according to to one of claims 37 to 44, wherein the initiator comprises aluminium trichloride, preferably in a wt.-ratio of isobutylene to aluminum trichloride of 500 to 20000, preferably 1500 to 10000.

46. The process according to claim 45, wherein water and/or alcohols, preferably water is used as proton source, preferably in an amount of from 0.05 to 2.0 moles of water per mole of aluminum in the aluminum trichloride, preferably in the range of 0.1 to 1.2 moles of water per mole of aluminum in the aluminum trichloride.

47. The process according to one of claims 37 to 46, wherein the temperature in step A) is from 10 to 100°C, preferably from 50 to 100°C, more preferably from 60 to 95°C and even more preferably from 75 to 95°C.

48. The process according to one of claims 1 to 47, wherein the at least one LCST compound is selected from the group consisting of:

poly(N-isopropylacrylamide), poly(N-isopropylacrylamide-co-N,N-dimethylacrylamide, poly(N-isopropylacrylamide)-alt-2-hydroxyethylmethacrylate, poly(N-vinylcaprolactam), poly(N,N-diethylacrylamide), poly[2-(dimethylamino)ethyl methacrylate], poly(2-oxazoline) glycopolymers, Polyglypolyisobutylenes, poly(3-ethyl-N-vinyl-2-pyrrolidone), hydroxylbutyl chitosan, polyoxyethylene (20) sorbitan monostearate, polyoxyethylene (20) sorbitan monolaurate, polyoxyethylene (20) sorbitan monooleate, methyl cellulose, hydroxypropyl cellulose, hydroxyethyl methylcellulose, hydroxypropyl methylcellulose, a poly(ethylene glycol) methacrylates with methacrylate comprising 2 to 6 ethylene glycol

units, a polyethyleneglycol-co-polypropylene ~~glycols, preferably those with 2 to 6 ethylene glycol units and 2 to 6 polypropylene units, compounds~~glycol, a compound of formula (I~~)~~):

~~(I)~~ $HO\text{-}[\text{-}CH_2\text{-}CH_2\text{-}O]_x\text{-}[\text{-}CH(CH_3)\text{-}CH_2\text{-}O]_y\text{-}[\text{-}CH_2\text{-}CH_2\text{-}O]_z\text{-}H$ (I)

~~with~~wherein y ~~=~~ =3 to 10 and x and z ~~=~~ =1 to 8, whereby y+x+z is from 5 to 18,

~~polyethyleneglycol-co-polypropylene glycol, preferably those with 2 to 8 ethylene glycol units and 2 to 8 polypropylene units,~~ an ethoxylated iso-$C_{13}H_{27}$-~~alcohols, preferably with an ethoxylation degree of 4 to 8,~~alcohol, a polyethylene glycol ~~with~~comprising 4 to 50~~, preferably 4 to 20~~ ethyleneglycol units, a polypropylene glycol ~~with~~comprising 4 to 30~~, preferably 4 to 15~~ propyleneglycol units, a polyethylene glycol monomethyl~~,~~ ~~dimethyl, monoethyl and diethyl~~ ether ~~with~~ comprising 4 ~~to~~ to 50~~, preferably 4 to 20~~ ethyleneglycol ~~units, polypropylene~~ a polyethylene glycol ~~monomethyl,~~ dimethyl~~, monoethyl and diethyl~~ ether ~~with~~comprising 4 to 50~~, preferably 4 to 20 propyleneglycol units, and in another embodiment additionally hydroxyethyl cellulose, whereby methyl cellulose, hydroxypropyl cellulose, hydroxyethyl methylcellulose and hydroxypropyl methylcellulose are preferred.~~

~~49. The process according to one of claims 1 to 48, wherein the amount of LCST compound(s) present in the aqueous medium employed in step A) is of from 1 to 20,000 ppm, preferably 3 to 10,000 ppm, more preferably 5 to 5,000 ppm and even more preferably 10 to 5,000 ppm with respect to the amount of polyisobutylene present in the organic medium.~~

~~50. The process according to one of claims 1 to 49, wherein the amount of LCST compound(s) present in the aqeuous medium employed in step A) is of from 1 to 5,000 ppm, preferably 3 to 1,000 ppm, more preferably 5 to 500 ppm and even more preferably 5 to 100 ppm with respect to the amount of polyisobutylene present in the organic medium.~~

~~51. The process according to one of claims 1 to 50, wherein the LCST compounds exhibit a molecular weight of at least 1,500 g/mol, preferably at least 2,500 g/mol and more preferably at least 4,000 g/mol.~~

~~52. The process according to one of claims 37 to 51, comprising a further step C) wherein the polyisobutylene particles contained in the aqueous slurry obtained according to step B) are separated to obtain isolated polyisobutylene particles.~~

~~53. The process according to one of claims 37 to 51, comprising further step C) wherein the polyisobutylene particles contained in the aqueous slurry obtained according to step B) are separated to obtain isolated polyisobutylene particles and further step D) wherein the (isolated) polyisobutylene particles are dried,~~

preferably to a residual content of volatiles of 7,000 or less, preferably 5,000 or less, even more preferably 4,000 or less and in another embodiment 2,000 ppm or less, preferably 1,000 ppm or less.

54. The process according to one of claims 1 to 53, comprising as a further step shaping of the polyisobutylene particles to obtain reshaped polyisobutylene particles such as pellets or shaped articles such as bales.

55. Aqueous slurry obtainable according to a process according to claims 1 to 51.

56. Polyisobutylene particles obtainable according to a process according to claim 52 or 53.

57. Reshaped polyisobutylene particles obtainable according to a process according to claim 54.

58. Polyisobutylene composition, in particular polyisobutylene particles and reshaped polyisobutylene particles comprising

I) 96.0 wt.-% or more, preferably 97.0 wt.-% or more, more preferably, 98.0 wt.-% or more even more preferably 99.0 wt.-% or more, yet even more preferably 99.2 wt.-% or more and in another embodiment 99.5 wt.-% or more of polyisobutylene

II) 0 to 3.0 wt.-%, preferably 0 to 2.5 wt.-%, more preferably 0 to 1.0 wt.-% and more preferably 0 to 0.40 wt.-% of salts of

- mono- or multivalent metal ions or in another embodiment
- stearates and palmitates of multivalent metal ions or in another embodiment
- stearates and palmitates of calcium and zinc

III) 1 ppm to 5,000 ppm, preferably from 1 ppm to 2,000 ppm and in a more preferred embodiment from 5 to 1,000 ppm or from 5 to 500 ppm of at least one LCST compound.

59. Polyisobutylene composition, in particular (reshaped) polyisobutylene particles comprising 98.5 wt.-% or more, preferably 98.8 wt.-% or more, more preferably 99.0 wt.-% or more even more preferably 99.2 wt.-% or more, yet even more preferably 99,4 wt.-% or more and in another embodiment 99.5 wt.-% or more of polyisobutylene and having an ash content measured according to ASTM D5667 of 0.2 wt.-% or less, preferably 0.1 wt.-% or less, more preferably 0.08 wt.-% or less and even more preferably 0.05 wt.-% or less.

60. Polyisobutylene composition according to claim 59, further ethyleneglycol units, a polyethylene glycol monoethyl ether comprising 1 ppm4 to 5,000 ppm, preferably from 1 ppm to 2,000 ppm and in 50 ethyleneglycol units, a more preferred embodiment from 5 to 1,000 ppm or from 5 to 500 ppm of a least one LCST compound.

61. Polyisobutylene composition, in particular (reshaped) polyisobutylene particles and polyisobutylene productspolyethylene glycol diethyl ether comprising 4 to 50 ethyleneglycol units, a polypropylene glycol monomethyl ether comprising 4 to 50 propyleneglycol units, a polypropylene glycol dimethyl ether comprising 4 to 50 propyleneglycol units, a polypropylene glycol monoethyl ether comprising 4 to 50 propyleneglycol units, a polypropylene glycol diethyl ether comprising 4 to 50 propyleneglycol units, and hydroxyethylcellulose.

I) 100 parts by weight of polyisobutylene (100 phr)

II) 0.0001 to 0.5, preferably 0.0001 to 0.2, more preferably 0.0005 to 0.1, even more preferably 0.0005 to 0.05 phr of a least one LCST compound and

III) no or from 0.0001 to 3.0, preferably no or from 0.0001 to 2.0, more preferably no or from 0.0001 to 1.0, even more preferably no or from 0.0001 to 0.5, yet even more preferably no or from 0.0001 to 0.3, and most preferably no or from 0.0001 to 0.2 phr of

- salts of mono- or multivalent metal ions or in another embodiment of
- stearates and palmitates of mono- or multivalent metal ions or in another embodiment of
- calcium stearate, calcium palmitate, zinc stearate or zinc palmitate

and

IV) no or from 0.005 to 0.1, preferably from 0.008 to 0.05, more preferably from 0.03 to 0.07 phr of antioxidants and

V) from 0.005 to 0.5, preferably from 0.01 to 0.3, more preferably from 0.05 to 0.2 phr of volatiles having a boiling point at standard pressure of 200°C or less.

62. Polyisobutylene 4. The composition according to claim 3, wherein said at least one lower critical solution temperature compound is a polyethyleneglycol-co-polypropylene glycol comprising 2 to 8 ethylene glycol units and 2 to 8 polypropylene units.

5. The composition according to claim 4, wherein said at least one lower critical solution temperature compound is a

polyethyleneglycol-co-polypropylene glycol comprising 2 to 6 ethylene glycol units and 2 to 6 polypropylene units.

6. The composition according to claim 3, wherein said at least one lower critical solution temperature compound is an ethoxylated iso-$C_{13}H_{27}$-alcohol having an ethoxylation degree of 4 to 8.

7. The composition according to claim 3, wherein said at least one lower critical solution temperature compound is polyethylene glycol comprising 4 to 20 ethyleneglycol units.

8. The composition according to claim ~~61, wherein the components I)~~3, wherein said at least one lower critical solution temperature compound is polypropylene glycol comprising 4 to 15 propyleneglycol units.

9. The composition according to claim 3, wherein said at least one lower critical solution temperature compound is selected from the group consisting of a polyethylene glycol monomethyl ether comprising 4 to 20 ethyleneglycol units, a polyethylene glycol dimethyl ether comprising 4 to 20 ethyleneglycol units, a polyethylene glycol monoethyl ether comprising 4 to 20 ethyleneglycol units, and a polyethylene glycol diethyl ether comprising 4 to 20 ethyleneglycol units.

10. The composition according to claim 3, wherein said at least one lower critical solution temperature compound is selected from the group consisting of a polypropylene glycol monomethyl ether comprising 4 to 20 propyleneglycol units, a polypropylene glycol dimethyl ether comprising 4 to 20 propyleneglycol units, a polypropylene glycol monoethyl ether comprising 4 to 20 propyleneglycol units, a polypropylene glycol diethyl ether comprising 4 to 20 propyleneglycol units.

11.

~~to V) add up to 100.00501 to 104.100000 parts by weight, preferably from 100.01 to 103.00 parts by weight, more preferably from 100.10 to 101.50 parts by weight, even more preferably from 100.10 to 100.80 parts by weight and together represent 99.80 to 100.00 wt.-%, preferably 99.90 to 100.00 wt.-%, more preferably 99.95 to 100.00 wt.-% and yet even more preferably 99.97 to 100.00 wt.-% of the total weight of the polyisobutylene composition.~~

63. Polyisobutylene particles according to claim 56, reshaped polyisobutylene particles according to claim 57 and polyisobutylene compositions according to claims 58 to 62, wherein the viscosity averaged molecular weight (M_v) of the polyisobutylene is in the range of from 100 to 3,000 kg/mol, preferably in the range of from 250 to 3,000 kg/mol or, in another embodiment in the range of from 100 to 2,000 kg/mol, preferably in the range of from 200 to 2,000 kg/mol, more preferably in the range of from 350 to 1,800 kg/mol, even more preferably in the range of from 400 to 1500 kg/mol and yet even more preferably of from 700 to 1300 kg/mol or in another embodiment the viscosity averaged molecular weight (M_v) of the polyisobutylene is in the range of from 2,001 to 3,000 kg/mol or in yet another embodiment the viscosity averaged molecular weight (M_v) of the polyisobutylene is in the range of from 3,001 to 10,000 kg/mol..

64. Polyisobutylene particles according to claim 56, reshaped polyisobutylene particles according to claims 57 and polyisobutylene compositions according to claims 58 to 63, wherein the polydispersity of the polyisobutylenes is in the range of 3.0 to 5.5 as measured by the ratio of weight average molecular weight to number average molecular weight as determined by gel permeation chromatography.

65. Polyisobutylene particles according to claim 56, reshaped polyisobutylene particles according to claims 57 and polyisobutylene compositions according to claims 58 to 64, wherein the polyisobutylene has a Mooney viscosity of at least 10 (ML 1 + 8 at 125°C, ASTM D 1646), preferably of from 10 to 80, more preferably of from 20 to 80 and even more preferably of from 25 to 60 (ML 1 + 8 at 125°C, ASTM D 1646).

66. Reshaped polyisobutylene particles according to claim 57 and 63 to 65, whereby they are or form a pellet or a shaped article, preferably a bale.

67. Shaped article, in particular a pellet or bale obtainable by shaping polyisobutylene particles according to claims 56, 63 to 66 or reshaped polyisobutylene particles according to claims 57, 63 to 66.

68. Blends or compounds obtainable by blending or compounding the polyisobutylene particles, reshaped polyisobutylene particles or polyisobutylene compositions or shaped articles according to claims 56 to 67.

69. Use of the polyisobutylene particles, reshaped polyisobutylene particles or polyisobutylene compositions or the shaped articles according to claims 56 to

67 or the blends and compounds of claim 68 for sealants, coatings, adhesives and roofings.

70. Sealants, adhesives, coatings and roofings made from or comprising polyisobutylene particles, reshaped polyisobutylene particles or polyisobutylene compositions or the shaped articles according to claims 56 to 67 or the blends and compounds of claim 68.

The composition according to claim 2, wherein said at least one lower critical solution temperature compound is selected from the group consisting of methyl cellulose, hydroxypropyl cellulose, hydroxyethyl methylcellulose, and hydroxypropyl methylcellulose.

12. The composition according to claim 11, wherein said methyl cellulose, hydroxypropyl cellulose, hydroxyethyl methylcellulose, and hydroxypropyl methylcellulose have a degree of substitution of from 0.5 to 2.8.

13. The composition according to claim 12, wherein the degree of substitution is from 1.2 to 2.5.

14. The composition according to claim 12, wherein the degree of substitution is from 1.5 to 2.0.

15. The composition according to claim 11, wherein said hydroxypropyl cellulose, hydroxyethyl methylcellulose, and hydroxypropyl methylcellulose have a moles of substitution of at least 3 with respect to ethylene glycol or propylene glycol groups per glucose unit.

16. The composition according to claim 15, wherein the moles of substitution is from 4 to 20 with respect to ethylene glycol or propylene glycol groups per glucose unit.