CLAIMS

1. A process for the preparation of halogenated rubbers, the process comprising:

a) providing a reaction medium comprising

a common aliphatic medium comprising at least 50 wt.-% of one or more aliphatic hydrocarbons having a boiling point of 45° C. to 80° C. at a pressure of 1013 hPa, whereby the common aliphatic medium further comprises a content of cyclic aliphatic hydrocarbons of less than 25 wt.-% and

a monomer mixture comprising at least one isoolefin monomer, at least one multiolefin monomer and either no or at least one other co-polymerizable monomer in a mass ratio of monomer mixture to common aliphatic medium of from 40:60 to 99:1,

b) polymerizing the monomer mixture within the reaction medium to form a rubber solution comprising a rubber polymer which is at least substantially dissolved in the medium comprising the common aliphatic medium and residual monomers of the monomer mixture;

c) separating residual monomers of the monomer mixture from the rubber solution to form a separated rubber solution comprising the rubber and the common aliphatic medium, and

d) halogenating the rubber in the separated rubber solution using a halogenating agent.

2. The process according to claim 1, wherein the rubber is a butyl rubber.

3. The process according to claim 1, wherein the monomer mixture comprises 80.0% to 99.9% by weight of the at least one isoolefin monomer and 0.1% to 20.0% by weight of the at least one multiolefin monomer.

4. The process according to one of the claims 1, wherein the isoolefin monomer is isobutene and the multiolefin monomer is isoprene.

5. The process according to one of the claims 1, wherein the common aliphatic medium comprises at least 80 wt.-% of one or more aliphatic hydrocarbons having a boiling point of 45° C. to 80° C. at a pressure of 1013 hPa.

6. The process according to one of the claims 1, wherein the common aliphatic medium has a content of cyclic aliphatic hydrocarbons of less than 20 wt.-%.

7. The process according to one of the claims 1, wherein the common aliphatic medium has a content of cyclohexane of less than 2.5 wt.-%.

8. The process according to one of the claims 1, wherein the common aliphatic medium contains at least 30 wt.-% branched, non-cyclic aliphatic hydrocarbons having a boiling point of 45° C. to 80° C. at a pressure of 1013 hPa.

9. The process according to one of the claims 1, wherein the reaction is performed in a polymerization reactor, and wherein the viscosity of the solution at the discharge of the polymerization reactor is less than 2000 cP.

10. The process according to one of the claims 1, wherein the solids content of the rubber solution obtained following step b) is 3 to 25% by weight.

11. The process according to one of the claims 1, wherein the halogenating agent is molecular bromine or chlorine.

12. The process according to one of the claims 1, wherein the amount of halogenating agent is 0.1 to 20% by weight of the rubber.

13. The process according to one of the claims 1, wherein the halogenating agent is a brominating agent and is used in combination with an oxidizing agent.

14. The process according to one of the claims 1, further comprises curing the halogenated rubber obtained in step d).