Claims

1. A process for the preparation of halogenated rubbers comprising at least the steps of:
   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 in the range 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,
   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 or 2, wherein monomer mixture comprises in the range of from 80,0 % to 99,9 % by weight of at least one isoolefin monomer and in the range of from 0,1 % to 20,0 % by weight of at least one multiolefin monomer.

4. The process according to one of the claims 1 to 3, wherein the isoolefin monomer is isobutene and the multiolefin monomer is isoprene.

5. The process according to one of the claims 1 to 4, wherein the common aliphatic medium comprises at least 80 wt.-% of one or more aliphatic hydrocarbons having a boiling point in the range of 45°C to 80°C at a pressure of 1013 hPa.

6. The process according to one of the claims 1 to 5, 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 to 6, 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 to 7, wherein the common aliphatic medium has a content of branched, non-cyclic aliphatic hydrocarbons having a boiling point in the range of 45°C to 80°C at a pressure of 1013 hPa of at least 30 wt.-%.

9. The process according to one of the claims 1 to 8, 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 to 9, wherein the solids content of the rubber solution obtained following in step b) is in the range of from 3 to 25 % by weight.

11. The process according to one of the claims 1 to 10, wherein molecular bromine or chlorine is used as halogenating agent.

12. The process according to one of the claims 1 to 11, wherein the amount of halogenating agent used is in the range of from 0.1 to 20 % by weight of the rubber.

13. The process according to one of the claims 1 to 12, 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 to 13, wherein the process further comprises the curing of the halogenated rubber obtained in step d).

CLAIMS

1. An invention not claimed in any divisional application.