

ABSTRACT

CONTINUOUS SYNTHESIS OF AN ETHYLENE AND BUTADIENE COPOLYMER

The present invention relates to a process for the synthesis of an ethylene/butadiene copolymer, characterized in that the process is continuous and comprises the following concomitant steps:

- a. Feeding at least one stirred polymerization reactor with a mixture of ethylene, butadiene, hydrocarbon-based solvent and catalytic system allowing the formation of cyclic *trans*-1,2-cyclohexane units in the polymer chain with a mole ratio of ethylene to the sum of the ethylene and butadiene monomers, defined by $Q_{nE}/(Q_{nE} + Q_{nB})$, with Q_{nE} the molar flow rate of ethylene and Q_{nB} the molar flow rate of butadiene, ranging from 0.5 to 0.99; the concentration of ethylene and butadiene monomers in the polymerization reaction medium being strictly less than 15% by weight relative to the total weight; the operating pressure of the reactor is greater than or equal to the saturated vapour pressure of the polymerization reaction medium; and the polymerization temperature is greater than 90°C;
- b. Recovering the ethylene/butadiene copolymer, this copolymer comprising, statistically distributed, ethylene units, butadiene units and *trans*-1,2-cyclohexane units, the molar fraction of ethylene units in said copolymer being greater than or equal to 50%, relative to the total number of moles of ethylene, butadiene and *trans*-1,2-cyclohexane units.