Claims

1. A process for continuously preparing polyisobutylene having a content of terminal double bonds of more than 50% by polymerizing isobutene in the presence of a polymerization catalyst customary therefor, which comprises combining a technical 1-butene-, 2-butene- and isobutene-containing C_4 hydrocarbon stream which may comprise up to 3000 ppm by weight of 1,3-butadiene together with a stream of pure isobutene and feeding them into the reaction zone in such a way that the steady-state concentration of the isobutene in the combined stream at the feed point of the combined stream into the reaction zone has an average value of at least 40% by weight.

2. The process according to claim 1, wherein the steady-state concentration of isobutene in the combined stream at the feed point of the combined stream into the reaction zone has an average value of 40% by weight to 60% by weight.

3. The process according to claim 1 or 2, wherein the steady-state concentration of isobutene in the combined stream at the feed point of the combined stream into the reaction zone has a substantially constant value which may vary over the course of the polymerization reaction by a maximum of 10% in the upward or downward direction, based on the mean isobutene concentration in the combined stream at the feed point.

4. A polymerization plant for continuously preparing polyisobutylene having a content of terminal double bonds of more than 50% by polymerizing isobutene in the presence of a polymerization catalyst customary therefor, comprising a temperature-controllable reaction zone for the performance of the polymerization reaction, feed devices and removal devices, wherein the polymerization plant comprises a feed device into the reaction zone for a combined stream of a technical 1-butene-, 2-butene- and isobutene-containing C_4 hydrocarbon stream which may comprise up to 3000 ppm by weight of 1,3-butadiene, and a stream of pure isobutene.

5. The polymerization plant according to claim 4, wherein the feed device for the combined stream of the technical C_4 hydrocarbon stream and the stream of pure isobutene comprises a regulating device which ensures that the steady-state concentration of isobutene in the combined stream at the feed point of the combined stream into the reaction zone has an essentially constant value which may vary over the course of the polymerization reaction by a maximum of 10% in the upward or downward direction, based on the mean isobutene concentration in the combined stream at the feed point.

Claims

1. An invention not claimed in any divisional application.