Claims

1. A boron trifluoride-catalyst complex for polymerization of isobutene, consisting of boron trifluoride as a polymerization catalyst and a cocatalyst mixture comprising:

(A) 10 to 90 % by weight of at least one monohydric primary alcohol having 1 to 20 carbon atoms and

(B) 90 to 10 % by weight of at least one monohydric secondary alcohol having 3 to 20 carbon atoms,

where the molar ratio of boron trifluoride to the sum of all cocatalyst alcohols from (A) and (B) is 2 : 1 to 1 :10.

2. The boron trifluoride-catalyst complex according to claim 1, in which the at least one monohydric primary alcohol (A) is selected from methanol, ethanol, 1-propanol and 1-butanol.

3. The boron trifluoride-catalyst complex according to claim 1 or 2, in which the at least one monohydric secondary alcohol (B) is selected from isopropanol and 2-butanol.

4. A process for preparing high-reactivity isobutene homopolymers having a number-average molecular weight of 300 to 50 000 by polymerizing isobutene in the liquid phase in the presence of a polymerization catalyst based on boron trifluoride, where as a feedstock a C_4 hydrocarbon mixture comprising at least 20 % by weight of isobutene and a total of at least 10 % by weight of other C_4-olefins, which comprises using, as the polymerization catalyst, a boron trifluoride-catalyst complex according to any one of claims 1 to 3.

5. The process for preparing isobutene homopolymers according to claim 4, wherein the process is operated continuously and the feedstock used is a technical C_4

hydrocarbon stream selected from C_4 raffinates, C_4 cuts from isobutane dehydrogenation, and C_4 cuts from steamcrackers and fluid catalyzed crackers.

6. The process for preparing isobutene homopolymers according to claim 4 or 5, wherein the polymerization is performed at temperatures in the range from -60 °C to +40 °C.

7. The process according to any one of claims 4 to 6 for preparation of isobutene homopolymers having a content of terminal vinylidene double bonds of at least 50 mol%.