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(54) Title: PROCESS FOR PRODUCING BRANCHED POLYOLEFIN

(57) Abstract: The present disclosure provides a process. In an embodiment, the process includes contacting, under first polymerization conditions in a first polymerization reactor at a temperature less than 150°C, a first polymerization catalyst and a first cocatalyst with (i) an ethylene monomer and an optional  $\alpha$ -olefin comonomer, and (ii) a dual-headed aluminum-alkyl chain transfer agent. The process includes first forming one or more telechelic aluminum-terminated polymer chains and feeding the one or more telechelic aluminum-terminated polymer chains to a second polymerization reactor. The second polymerization reactor has second polymerization conditions, a second polymerization catalyst, a second cocatalyst, and a temperature from 160°C to 250°C. The process includes contacting, in the second polymerization reactor, (iii) an ethylene monomer and an optional olefin comonomer, and (iv) the one or more telechelic aluminum-terminated polymer chains. The process includes forming an ethylene-based polymer having an  $I_{10}/I_2$  greater than 8.0 and a vinyl content greater than 20/1,000,000C.



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