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(54) Title: PROCESS FOR PRODUCING POLYETHYLENE POLYMERS

(57) Abstract: The disclosure relates to a process for polymerising olefins, the process comprising polymerising ethylene, optionally in the presence of at least one other alpha olefin comonomer, preferably C4-C10 alpha olefin comonomer, preferably in multi stage poly-
merisation process configuration, in the presence of a single-site polymerisation catalyst to produce a polymer component to produce a polyethylene polymer or a polyethylene copolymer, wherein the single-site polymerisation catalyst comprises (i) a transition metal complex; (ii) a cocatalyst; and optionally (iii) a support; and is characterised by a (Weibull modulus) x (scale parameter) product equal to or higher than 40 MPa and a (Weibull modulus) / (scale parameter) ratio equal to or lower than 0.50 MPa⁻¹ wherein the Weibull modulus and the scale parameter are determined by the Weibull analysis of the compressive strength of the catalyst particles. The disclosure further relates to a single-site polymerisation catalyst, comprising (i) a transition metal complex; (ii) a cocatalyst; and optionally (iii) a support, preferably a silica support; wherein the single-site polymerisation catalyst is characterised by a (Weibull modulus) x (scale parameter) product equal to or higher than 40 MPa and a (Weibull modulus) / (scale parameter) ratio equal to or lower than 0.50 MPa⁻¹ wherein the Weibull modulus and the scale parameter are determined by the Weibull analysis of the compressive strength of the catalyst particles. The disclosure further relates to use of the single-site polymerisation catalyst in the preparation of a polyethylene polymer component, a polyethylene polymer, or a polyethylene copolymer.

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