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(54) Title: TRANSITION METAL COMPOUND, LIGAND SYSTEM, CATALYST SYSTEM AND PROCESS FOR PREPARING
POLYOLEFINS

(57) Abstract: The present invention relates to organometallic transition metal compounds of the formula (I) $Z^1A_nZ^2MX_m$ (I) where Z^1 is a coordinating group which comprises a six- π -electron central group which coordinates directly to M and which bears at least one fused-on saturated or unsaturated C_2 - C_{30} ring system containing at least one heteroatom selected from the group consisting of the elements B, Al, Ga, In, Si, Ge, Sn, O, S, Se, Te, N, P, As and Sb in the ring, where the heteroatom is bound directly to a carbon atom of the six- π -electron-containing central group and the heteroatom may also bear radicals which are not constituents of the ring, A is a divalent bridge between the groups Z^1 and Z^2 , Z^2 is a coordinating group having the same meaning as Z^1 or is a group comprising an open pentadienyl, a cyclopentadienyl-containing group or a heterocyclic, 5- or 6-membered group containing six π electrons, n = zero or 1, M is an element of group 3, 4, 5 or 6 of the Periodic Table of the Elements or is an element of the lanthanides, the radicals X are identical or different and are each an organic or inorganic radical, with two radicals X also being able to be joined to one another, m is 0, 1 or 2, and at least one of the three molecule fragments Z^1 , Z^2 and A bears a monovalent organic radical which contains at least one olefinic C=C double bond and has from 2 to 40 carbon atoms, ligand systems having such a substitution pattern, catalyst systems comprising at least one of the transition metal compounds of the invention, a process for preparing polyolefins by polymerization or copolymerization of at least one olefin in the presence of one of the catalyst systems of the invention and the use of the ligand systems of the invention for preparing organometallic transition metal compounds.



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