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(54) **Title:** HIGH PERFORMANCE ZIEGLER-NATTA CATALYST SYSTEMS, PROCESS FOR PRODUCING SUCH SUPPORTED CATALYSTS AND USE THEREOF

(57) **Abstract:** A method for making a solid catalyst component for use in a Ziegler-Natta catalyst includes combining in a hydrocarbon solvent a porous particulate support with a hydrocarbon soluble organomagnesium compound to form a suspension. The organomagnesium compound is halogenated followed by addition of an alcohol and the mixture is then reacted with a titanium compound followed by a reaction with at least one diether compound to form the solid catalyst component. Afterwards the reaction product is extracted with a mixture of a titanium compound and a hydrocarbon solvent. The solid catalyst component recovered is combined with an aluminum cocatalyst to form a Ziegler-Natta catalyst system for the polymerization of olefins. In particular, the catalyst system including a diether internal electron donor may have an activity and hydrogen response suitable for the production of propylene polymers having a molecular weight distribution (PI(GPC)) in the range from about 5.75 to about 9.



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