

Abstract

The invention discloses a process for preparing high-performance propylene polymers, the process utilizing a high activity, highly stereoselective Ziegler-Natta catalyst and two or more stages of polymerization carried out under different hydrogen concentrations to prepare propylene polymers having broad molecular weight distribution, wherein non-uniformness of isotacticity of molecular chains of the final propylene polymers is improved by adjusting or controlling stereoselectivity of catalytic active sites under different hydrogen concentrations, namely, making the low molecular weight fraction of the polymers having a higher isotacticity and making the high molecular weight fraction of the polymers having a lower isotacticity, thereby overcoming the drawbacks of the propylene polymers having broad molecular weight distribution known in the art. The resulting final polymers have excellent combined properties, in particular, remarkably improved mechanical properties.