Abstract

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SINGLE-SITE CATALYSTS FOR PROPYLENE-BASED POLYMERS

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Single-site catalysts (SSC) are considered one of the most significant innovations in the polymer industry in recent years. These catalysts allow a high degree of tailoring of molecular structure, which enables suppliers to optimize a resin's physical properties and processability. Metallocene-based polyethylenes and ethylene-based elastomers have already been successfully introduced in the market place. However, metallocene-based polypropylene resins are just beginning to be commercialized.

This report reviews the patents issued to Exxon, Hoechst, BASF, Dow, Fina, Chisso, and Mitsui Toatsu to identify the likely commercial single-site catalyst systems for production of polypropylene. In addition, we will evaluate the economics for production of a typical organometallic complexes used in these single-site catalyst systems. The catalyst manufacturing economics representative of production of bridged zirconocene with cyclopentadienyl, indenyl, or fluorenyl ligands will have a significant impact on the success of metallocene based polymer commercialization.

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