POLYMERIZATION WITH FISCHER TROPSCH DERIVED OLEFINS

I. Tincul*, R.D. Sanderson*, D Joubert**

* Stellenbosch University **Sasol Technology R&D

ABSTRACT

In the late ‘80s and early 90s, the expectation was that new speciality polymers will be developed for each specific application, but because of the high costs and risk involved, and sparked by tremendous advances in catalyst technologies, what actually happened is that the properties of commodity polymers are continually being modified to be suitable for speciality application areas.

The Fischer-Tropsch process offers the polyolefin industry, in addition to the currently known even carbon number olefins, some less explored possibilities such as odd carbon number olefins and branched olefins. Propylene polymerization with Fisher-Tropsch derived olefins may extend the current range of commercial polyolefins with new classes being co- ter- and multipolymers produced with odd carbon number linear and branched olefins and may also include different combinations of the above with the commercially used even carbon number olefins.

This paper review some previous work on the polymerization of propylene with Fischer-Tropsch derived olefins and present some aspects of propylene polymerization with Fischer-Tropsch derived olefins on a particular magnesium chloride supported titanium chloride catalyst. By using different types of magnesium chloride, particular ether and alcohol components in various combinations for the support activation step and using different electron-donors and also changing the order of its addition during the titanium tetrachloride loading step, a multitude of catalysts having high activity and good comonomer response toward the Fisher-Tropsch derived olefins can be obtained.

This combination of specialized catalysts with the larger selection of olefins and their blends obtainable from the Fisher-Tropsch process clearly opens up an opportunity for an even wider application of commodity polymers in specialized application areas.