

ABSTRACT Presentation at the Blue Sky 2010 conference

New generation polymerization catalysts for EPDM production: Keltan ACE™.

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In late 2008 DSM Elastomers has started the commercial production of new and unique Keltan EPDM products in a solution process, applying novel single-site olefin polymerization catalyst technology. New advanced catalysts, developed at DSM Research under license of NOVA Chemicals Inc., comprise an unbridged cyclopentadienyl-amidine ligand combination on a group IV metal centre.

These highly active, cost-competitive catalyst systems are capable of producing new types of high molecular weight EPDM containing large amounts of 5-vinyl-2-norbornene (VNB) as third monomer. These so-called High VNB grades have large amounts of residual vinyl groups and fairly narrow molecular weight distributions and therefore show superior peroxide curing efficiency vs. conventional grades. As far as we know, such products are not attainable in a commercially viable manner when using Vanadium based Ziegler-Natta catalysts or other single-site catalyst combinations. This is attributed to the normal tendency of conventional catalyst systems with elevated VNB levels to give rise to uncontrolled branching in the reactor leading to excessive reactor fouling. With Keltan ACE™ these problems are solved. The first commercial high-VNB product using Keltan ACE™ technology, coded as Keltan DE8270C, was officially launched in April 2009.

During this presentation the synthesis of the cyclopentadienyl-amidine titanium complexes and their performance in olefin polymerization reactions along with some fundamental organometallic studies using these new catalysts will be presented.