

Abstract
Process Economics Program Report 36E
LINEAR LOW DENSITY POLYETHYLENE
(August 2008)

LLDPE has established itself as the third major member of the global polyethylene business along with LDPE and HDPE. In 2006, worldwide production of LLDPE reached 18.4 million metric tons, corresponding to 29% of total polyethylene. This report is an update and supplement to the series of Process Economics Program reports on technologies and production costs of linear low-density polyethylene (LLDPE).

In our report, we examined four processes that are practiced commercially. We evaluated a fluidized-bed gas-phase process, two solution processes, and a slurry loop process. The fluidized-bed gas-phase process is based on patents for the UNIPOL™ process using a supported metallocene catalyst to produce hexene-based LLDPE. The two solution processes evaluated were based on NOVA Chemical SCLAIRTECH™ and Advanced SCLAIRTECH™ processes using advanced Ziegler-Natta catalysts to produce octene-based LLDPE. The slurry loop process is based on ChevronPhillips Chemical patents for their process using a metallocene catalyst to produce hexene-based LLDPE. The metallocene catalyst is based on ChevronPhillips Chemical's activator-support technology.

We evaluated the production economics of one nameplate grade for each process based on single-line production capacities of 400,000 ton/yr. Evaluation of the transition costs is also included. In addition to the process evaluations, this report contains summaries of patents relating to the processes we have covered. The processes were updated based on relevant patents and other public disclosures. Also included is a section on the present status of the LLDPE industry with a list of estimated plant capacities.

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