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## REPORT OVERVIEW:

### Subjects addressed:

- End-use application overviews and regional demand summaries and outlooks for LDPE, LLDPE and EVAs
- Review of EVA, LDPE and LLDPE process technology offered by leading licensors
- Leader economics for EVA (18 percent and 28 percent VAM), LDPE and LLDPE (butene-1) for China
- Historical cash margins (selling price less plant costs) for China for 18 percent EVA, 28 percent EVA, LDPE and LLDPE (butene-1)

## High Pressure Polyethylene: Re-Emergence as a Specialty?

Just over 30 years ago, Union Carbide signed the first third-party commercial license for its UNIPOL process, thus ushering in the age of the linear low-density polyethylene. Benefits of the LLDPE process were stated as lower capital investment and lower energy costs. At the time, it appeared that the conventional high pressure tubular and autoclave processes had been eclipsed by new technology; investment in high pressure polyethylene plants ground to a halt.

However, history now indicates that such a dire forecast was premature for a number of reasons: first, LLDPE processes use catalysts which are very sensitive to polar co-monomers, meaning that LDPE copolymer materials which incorporated a polar monomer could not be made in these processes; second, in spite of decades of development, LLDPEs still remain more difficult to process, and are thus not preferred by fabricators with older or underpowered equipment; and third, the processing characteristics of LLDPEs cannot match the ease of fabrication of LDPEs in some processes, most notably extrusion coating.

To further investigate the outlook for LDPE, Nexant has undertaken a new comprehensive study designed to assess the commercial, technical, economic, and historical margins associated with the LDPE, LLDPE and EVA businesses. This is especially important in that high pressure LDPE and EVA pricing continues to offer substantial premiums over LLDPE products, complicating the low density polyethylene investment decision. The study provides critical information to companies considering investment in low density polyethylene.

The recently published report, **"High Pressure Polyethylene: Re-Emergence as a Specialty?"**, investigates the following:

### Polymer Coverage

- LDPE
- LLDPE
- EVAs (EVAs are defined as containing nine percent or more VAM)

### Market Coverage

The market overview section covers the following regions: North America, South America, Western Europe, Central and Eastern Europe, Middle East, Africa, Asia Pacific, and Global Summary.

### Process Technology Coverage

The report describes the process technologies offered by leading licensors, as selected by Nexant, for LDPE, LLDPE, 18 percent EVA, and 28 percent EVA.

### Leader Economics

Leader economics were prepared for a China location for 2011 using Nexant's Leader cost of production models. Economics are provided for LDPE (general purpose), LLDPE (butene-1; general purpose), 18 percent EVA, and 28 percent EVA.

### Historical Margins

Historical margins, defined as market price less plant costs, are provided for China for LDPE, LLDPE (butene-1), 18 percent EVA, and 28 percent EVA.

The study was designed to highlight the markets, technologies and historic margins associated with the high pressure and low-pressure polyethylene manufacturing approaches, so that companies considering investment in low density polyethylene have a good base of historical information to utilize in their decision-making process.

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