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# Bimodal HDPE Production by a Gas-Phase Process Similar to LyondellBasell's *Hyperzone*<sup>TM</sup> Process

Process Economics Program Review 2017-05

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### **Abstract**

In August 2016, LyondellBasell announced that it will build a new high-density polyethylene (HDPE) plant on the US Gulf Coast based on a new polyethylene process technology called *Hyperzone*<sup>TM</sup> PE technology. The plant will have a capacity of 500,000 metric tons per year of HDPE. Startup is planned for 2019. *Hyperzone*<sup>TM</sup> PE technology is a cascade gas-phase process based on LyondellBasell's multizone circulating reactor (MZCR) technology. The new gas-phase process will have the capability to produce a wide range of high-performance bimodal and multimodal HDPE products.

In this review, we will discuss the relevant patents that we believe are consistent with LyondellBasell's announcement about the *Hyperzone*<sup>TM</sup> PE technology. Based on a review of the information available in the public domain, IHS developed a process design. From the process design, we have prepared a process flow diagram, developed stream-by-stream material balances, and produced a tagged process equipment list for the major equipment based on our process design. From the equipment list, we prepared both a capital cost estimate for the battery limits process equipment and a total fixed capital (TFC) cost estimate for the process. IHS' estimates both for the investment costs and production economics for producing bimodal HDPE using this technology are presented in this review and are compared to other processes to produce bimodal HDPE.

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