

Abstract
Process Economics Report 221
OXYGENATE ECONOMICS
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The role of oxygenates in gasoline blending has evolved from that of discretionary octane improvers to mandated pollution control gasoline additives. Value chain advantages and government policies dictate the choice among competing oxygenates. In the 1980s, during U.S. gasoline lead phase-out, methyl tert-butyl ether (MTBE) became a very attractive gasoline additive because of its high octane blending value. In the 1990s, MTBE became the oxygenate of choice in U.S. reformulated gasoline. Its dominance resulted from readily available by-product isobutene feedstock. On-purpose MTBE production began to supplement by-product sources to meet increasing demand. This report analyzes crucial factors influencing production economics for the following oxygenates:

<u>Oxygenate</u>	<u>By-product Feed Source</u>	<u>On-purpose Feed Source</u>
MTBE	Propylene oxide, fluidized catalytic cracking (FCC), steam cracking	Butane
Ethyl tert-butyl ether (ETBE)	FCC	
tert-Amyl methyl ether (TAME)	FCC	
Diisopropyl ether (DIPE)	FCC	
Ethanol		Grain
Methanol		Natural gas

An understanding of oxygenate production economics is crucial as planned capacities are expected to exceed projected consumption. These factors are important to existing producers as well as those that are evaluating opportunities to enter this market. Knowledge of oxygenate production cost structures enables producers to evaluate industry competition and provides a benchmark against other low-cost high octane blending components (i.e., aromatics) in regions where oxygenate use is not mandatory.

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